



Peripheral  
Interface Guide

# Service Technical Procedures

**FRANK KLEIN**

**This Peripheral Interface Guide is the property of:**

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**Phone:** \_\_\_\_\_

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# Peripheral Interface Guide

## Introduction

Welcome to the eighth edition of the Apple® Peripheral Interface Guide.

This guide contains interface information--pin-outs, switch settings, cabling requirements, and diagrams of interface ports--for Apple computers, interface cards, and peripherals. This information will help you connect Apple and non-Apple peripherals to Apple computers. The information will also be useful in troubleshooting situations where interface problems may be involved.

The Peripheral Interface Guide contains the following information:

### **Macintosh, Apple II, Apple III, & Lisa/Macintosh XL Computers**

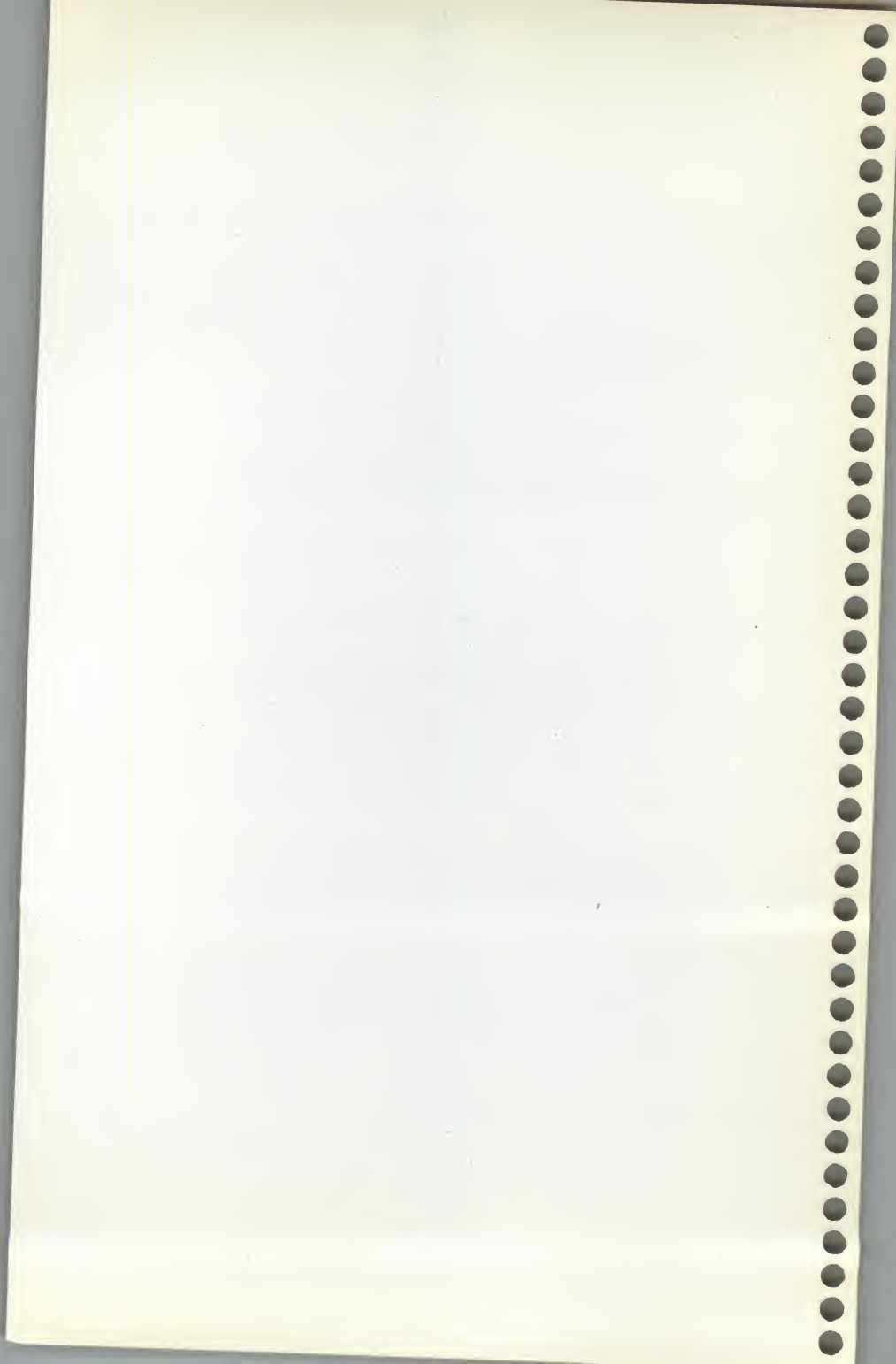
The first three sections contain the specifications for all built-in interface and interface card connectors for the Macintosh, Apple II, Apple III, and Lisa/Macintosh XL families of computers. Each section covers built-in interfaces first, followed by interface cards. Illustrations at the beginning of each section show the locations of the built-in interface connectors. The guide contains pin numbers, signal mnemonics, signal descriptions, and connector types for all connectors. For interface cards that contain option switches, a table lists the functions of the switches and how they should be set to produce various operating characteristics. Any special information related to an interface is noted. Peripheral connection tables at the end of each section indicate cable requirements for connecting compatible peripherals to each computer.

### **Peripherals**

This section covers Apple peripheral devices. Devices are arranged by category--Laser Printers, Non-Laser Printers, Modems and Communications, and Miscellaneous. The pin numbers, signal mnemonics, signal descriptions, and connector types are listed for each device. Option switch functions and settings are listed, with the default (factory) settings shown in bold type.

### **Cables**

Apple peripheral cables with their pin connections are included here. Each cable chart lists the devices that can be connected with that cable. This section also includes diagrams of the various connectors used.





# Macintosh Family Computers

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# Macintosh Family Computers

## Introduction

This section contains the specifications for all the built-in interfaces and interface card connectors for the Macintosh family of computers. Built-in interfaces are covered first, followed by interface cards. Illustrations at the beginning of the section show the locations of the built-in interface connectors.

### Notes:

A slash (/) after the signal name indicates that the signal is valid when the signal is low.

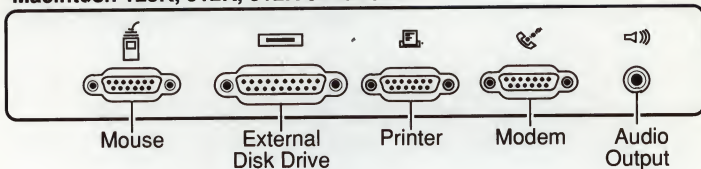
The connector specified is for the cable end, not the computer port.

In the peripheral connections tables, accessory kit part numbers followed by an asterisk (\*) include items in addition to the cable (software and/or manuals, for example).

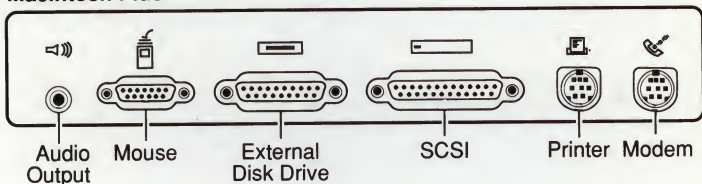
# Macintosh Family Computers

## Computer Port Locations

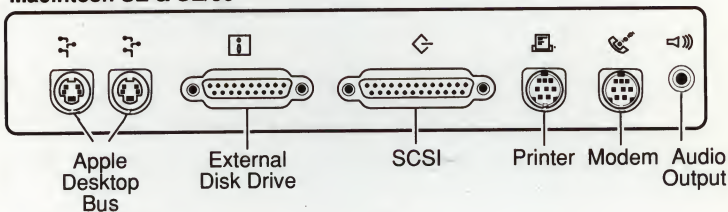
### Macintosh 128K, 512K, 512K enhanced



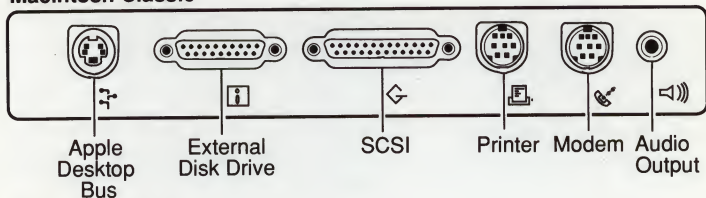
### Macintosh Plus



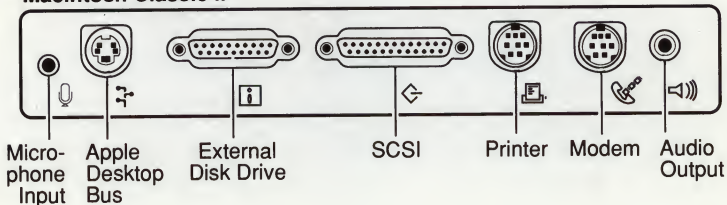
### Macintosh SE & SE/30



### Macintosh Classic



### Macintosh Classic II

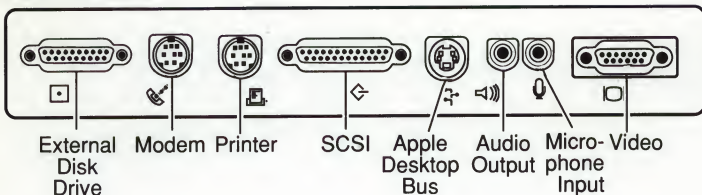




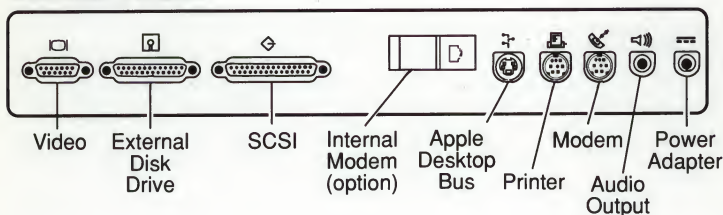
# Macintosh Family Computers

## Computer Port Locations

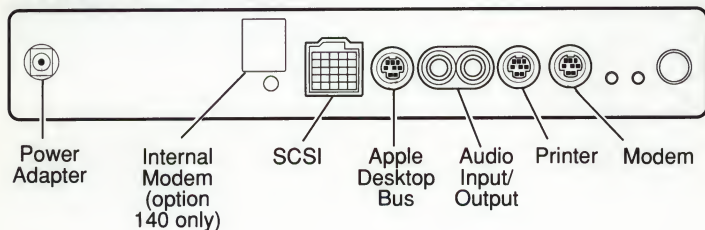
### Macintosh LC



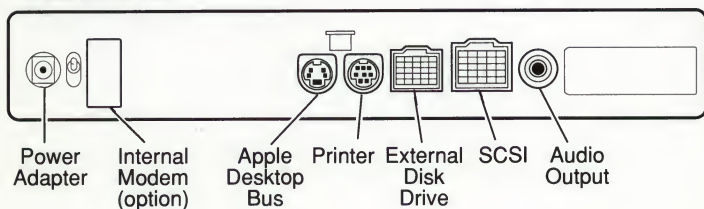
### Macintosh Portable



### PowerBook 140/170



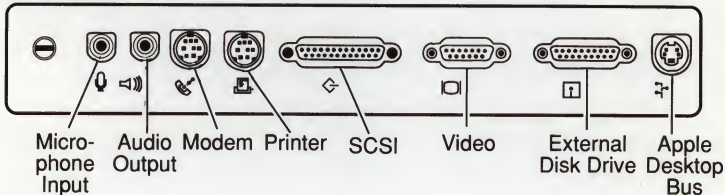
### PowerBook 100



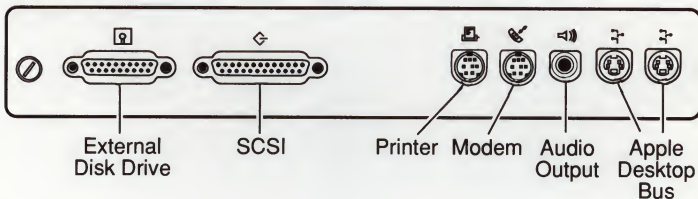
# Macintosh Family Computers

## Computer Port Locations

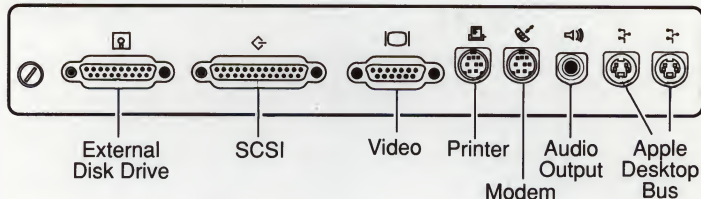
### Macintosh IIsi



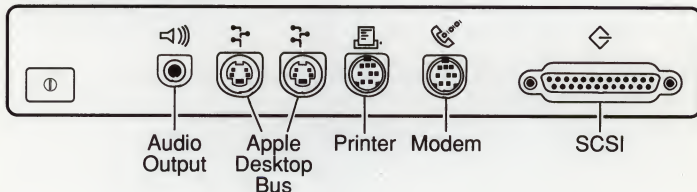
### Macintosh IIcx



### Macintosh IIci



### Macintosh II, IIx, IIfx

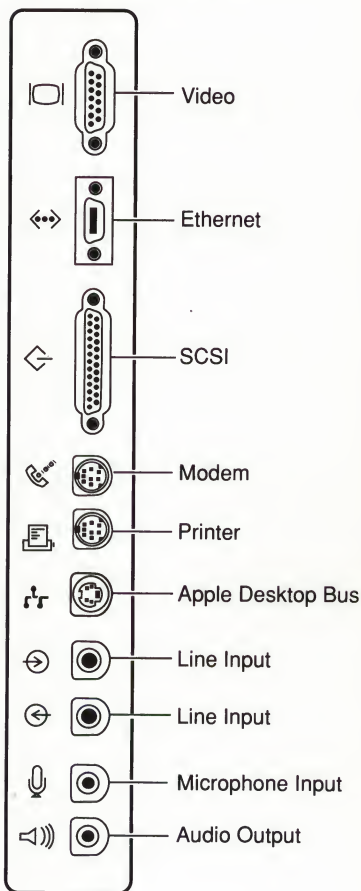
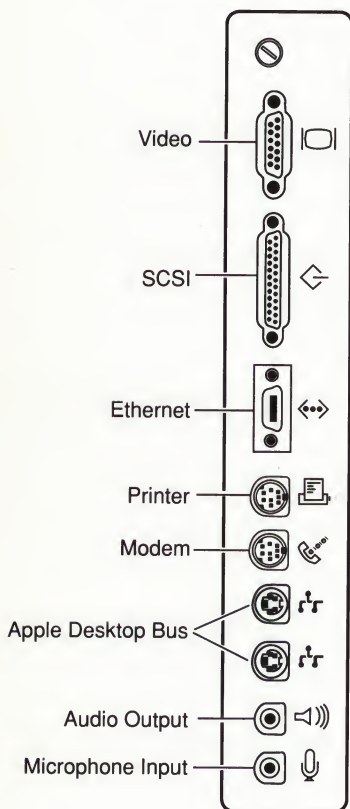


# Macintosh Family Computers

## Computer Port Locations

### Macintosh Quadra 900

### Macintosh Quadra 700



# Macintosh Family Computers

## Computer Ports

### Modem and Printer Connectors – DE-9

| Pin            | Signal Name | Signal Description                           |
|----------------|-------------|--|
| 1              | GND<br>FG   | Signal ground<br>Frame ground                |
| 2              | +5V<br>NC   | +5 volts<br>No connection                    |
| 3              | GND<br>SG   | Signal ground<br>Signal ground               |
| 4              | TXD+<br>NC  | Transmit Data +<br>No connection             |
| 5              | TXD-<br>TXD | Transmit Data -<br>Transmit Data             |
| 6              | +12V<br>NC  | +12 volts<br>No connection                   |
| 7 <sup>†</sup> | HSKi<br>NC  | Handshake input<br>No connection             |
| 8              | RXD+<br>NC  | Receive Data +<br>No connection <sup>§</sup> |
| 9              | RXD-<br>RXD | Receive Data -<br>Receive Data               |

Connector type: DE-9 male

This connector is present on the Macintosh 128K, 512K, and 512K enhanced.

The first set of signal names and descriptions listed applies to RS-422. The second set applies to RS-232.

<sup>†</sup> When connecting to an RS-232 device, HSKi can be used with data set ready (DSR) or other handshaking signals, depending on the device to be connected.

<sup>§</sup> When connecting to an RS-232 device, connect pin 8 to pin 3 (ground).



# Macintosh Family Computers

## Computer Ports

### Modem and Printer Connectors – Mini DIN-8

| Pin            | Signal Name | Signal Description  |
|----------------|-------------|---|
| 1              | HSKo        | Handshake output; connected to SCC Data Terminal Ready  |
| 2              | HSKi        | Handshake input; connected to SCC Clear To Send and Transmit/Receive Clock                              |
| 3              | TxD-        | Transmit Data (inverted); connected to SCC Transmit Data; tri-stated when Request To Send is deasserted |
| 4              | SG          | Signal Ground; connected to logic and chassis ground  |
| 5              | RxD-        | Receive Data (inverted); connected to SCC Receive Data  |
| 6              | TxD+        | Transmit Data; connected to SCC Transmit Data; tri-stated when Request To Send is deasserted            |
| 7 <sup>†</sup> | GPI         | General-Purpose input; connected to SCC Data Carrier Detect.  |
| 8              | RxD+        | Receive Data; connected to the SCC Receive Data   |

Connector type: Mini DIN-8 male

This connector is present on all Macintosh computers except the 128K, 512K, and 512K enhanced.

To connect DE-9 cables to the Mini DIN-8 port, use adapter cable 590-0341 (beige) or 590-0553/699-0430 (smoke).

<sup>†</sup> On serial port A (modem), if the VIA1 SYNC signal is high, this input will be routed to the receive/transmit clock input of the SCC. This clock input supports high-speed synchronous devices. Pin 7 is not connected on the Macintosh Plus, LC, or IIsi.

# Macintosh Family Computers

## Computer Ports

### SCSI Connector – DB-25 (Pins 1-12)

| Pin | Signal Name | Signal Description |
|-----|-------------|--------------------|
| 1   | REQ/        | Request            |
| 2   | MSG/        | Message            |
| 3   | I/O/        | Input/output       |
| 4   | RST/        | Reset              |
| 5   | ACK/        | Acknowledge        |
| 6   | BUSY/       | Busy               |
| 7   | GND         | Signal ground      |
| 8   | Data0/      | Data bit 0         |
| 9   | GND         | Signal ground      |
| 10  | Data3/      | Data bit 3         |
| 11  | Data5/      | Data bit 5         |
| 12  | Data6/      | Data bit 6         |

# Macintosh Family Computers

## Computer Ports

### SCSI Connector – DB-25 (Pins 13-25)

| Pin             | Signal Name | Signal Description        |
|-----------------|-------------|---------------------------|
| 13              | Data7/      | Data bit 7                |
| 14              | GND         | Signal ground             |
| 15              | C/D/        | Control/data              |
| 16              | GND         | Signal ground             |
| 17              | ATN/        | Attention                 |
| 18              | GND         | Signal ground             |
| 19              | SEL/        | Select                    |
| 20              | PARITY/     | Data parity               |
| 21              | Data1/      | Data bit 1                |
| 22              | Data2/      | Data bit 2                |
| 23              | Data4/      | Data bit 4                |
| 24              | GND         | Signal ground             |
| 25 <sup>†</sup> | TERMPWR     | +5 volts terminator power |

Connector type: DB-25 male

This connector is present on all Macintosh computers except the 128K, 512K, 512K enhanced, and PowerBook series.

Total length of cables should not exceed 20 feet (6 meters).

**CAUTION:** This interface uses the same type of connector as a standard RS-232 serial interface, but is electrically very different. DO NOT connect RS-232 devices or cables to this connector. Doing so can damage the device and the computer.

<sup>†</sup> Terminator power is not provided on the Macintosh Plus or Portable.

# Macintosh Family Computers

## Computer Ports

### SCSI Connector – HDI-30 (Pins 1-15)

| Pin            | Signal Name | Signal Description           |
|----------------|-------------|------------------------------|
| 1              | SCSI-Mode/  | SCSI disk mode enable signal |
| 2              | Data0/      | Data bit 0                   |
| 3              | GND         | Signal ground                |
| 4              | Data1/      | Data bit 1                   |
| 5 <sup>†</sup> | Termpwr     | +5 volts termination power   |
| 6              | Data2/      | Data bit 2                   |
| 7              | Data3/      | Data bit 3                   |
| 8              | GND         | Signal ground                |
| 9              | ACK/        | Acknowledge                  |
| 10             | GND         | Signal ground                |
| 11             | Data4/      | Data bit 4                   |
| 12             | GND         | Signal ground                |
| 13             | GND         | Signal ground                |
| 14             | Data5/      | Data bit 5                   |
| 15             | GND         | Signal ground                |

<sup>†</sup> Termination power is not provided on the PowerBook 100.



# Macintosh Family Computers

## Computer Ports

### SCSI Connector – HDI-30 (Pins 16-30)

| Pin | Signal Name | Signal Description |
|-----|-------------|--------------------|
| 16  | Data6/      | Data bit 6         |
| 17  | GND         | Signal ground      |
| 18  | Data7/      | Data bit 7         |
| 19  | PARITY/     | Data parity        |
| 20  | GND         | Signal ground      |
| 21  | REQ/        | Request            |
| 22  | GND         | Signal ground      |
| 23  | BUSY/       | Busy               |
| 24  | GND         | Signal ground      |
| 25  | ATN/        | Attention          |
| 26  | C/D/        | Control/data       |
| 27  | RST/        | Reset              |
| 28  | MSG/        | Message            |
| 29  | SEL/        | Select             |
| 30  | I/O/        | Input/output       |

Connector: 30-pin high-density interconnect (HDI-30)

This connector is present on the PowerBook 100, 140, and 170.

# Macintosh Family Computers

## Computer Ports

### Apple Desktop Bus Connector

| Pin            | Signal Name | Signal Description   |
|----------------|-------------|--|
| 1              | Data        | Bidirectional data bus   |
| 2 <sup>†</sup> | Power On/   | Signal momentarily grounded to pin 4 to begin power-up sequence in CPU |
| 3              | Power       | +5 volts   |
| 4              | Ground      | Signal Ground  |

Connector type: Mini DIN-4 male

This connector is present on all Macintosh computers except the 128K, 512K, 512K enhanced, and Plus.

Total length of all cables should not exceed 16 feet (5 meters).

<sup>†</sup> On the Macintosh II family; Quadra 700 and 900; and PowerBook 100, 140, and 170 only. Pin 2 is unused on all other models.

### Mouse Connector

| Pin | Signal Name | Signal Description                    |
|-----|-------------|---------------------------------------|
| 1   | GND         | Signal ground                         |
| 2   | +5V         | +5 volts DC                           |
| 3   | GND         | Signal ground                         |
| 4   | X2          | Left-to-right motion indicator        |
| 5   | X1          | Interrupt line (left-to-right motion) |
| 6   | NC          | No connection                         |
| 7   | SW          | Mouse button                          |
| 8   | Y2          | Up-down motion indicator              |
| 9   | Y1          | Interrupt line (up-down motion)       |

Connector type: DE-9 male

This connector is present on the Macintosh 128K, 512K, 512K enhanced, and Plus.

# Macintosh Family Computers

## Computer Ports

### Keyboard Connector

| Pin | Signal Name | Signal Description            |
|-----|-------------|-------------------------------|
| 1   | GND         | Ground                        |
| 2   | CLOCK       | Keyboard clock (input to VIA) |
| 3   | DATA        | Serial data line              |
| 4   | +5V         | +5 volts                      |

Connector type: RJ-11

This connector is present on the Macintosh 128K, 512K, 512K enhanced, and Plus.

### Ethernet Connector

| Pin   | Signal Name    | Signal Description                      |
|-------|----------------|---|
| 1     | FN Pwr         | +12 volts @ 175 mA or +5 volts @ 420 mA |
| 2     | DI-A           | Data In circuit A                       |
| 3     | DI-B           | Data In circuit B                       |
| 4     | VCC            | Voltage common                          |
| 5     | CI-A           | Control In circuit A                    |
| 6     | CI-B           | Control In circuit B                    |
| 7     | +5V            | +5 volts (from host)                    |
| 8     | +5V            | Secondary +5 volts (from host)          |
| 9     | DO-A           | Data Out circuit A                      |
| 10    | DO-B           | Data Out circuit B                      |
| 11    | VCC            | Secondary voltage common                |
| 12    | NC             | Reserved                                |
| 13    | NC             | Reserved                                |
| 14    | FN Pwr         | Secondary +12 volts or +5 volts         |
| Shell | Protective Gnd | Protective ground                       |

Connector type: Custom 14-pin .05" spaced ribbon

This connector is present on the Macintosh Quadra 700 and Quadra 900.



# Macintosh Family Computers

## Computer Ports

### Audio Output Connector – Monaural

| Pin      | Signal Name | Signal Description                |
|----------|-------------|-----------------------------------|
| (Tip)    | AUDIO       | .5-volt peak-to-peak audio signal |
| (Sleeve) | GND         | Signal ground                     |

Connector type: Monaural miniature phono plug (3.6 mm)

This connector is present on the Macintosh 128K, 512K, 512K enhanced, Plus, and SE.

The internal speaker is disabled when this connector is in use.

### Audio Output Connector – Stereo<sup>†</sup>

| Pin      | Signal Name | Signal Description  |
|----------|-------------|---|
| (Sleeve) | GND         | Signal ground   |
| (Tip)    | Left        | 1-volt peak-to-peak audio signal with an impedance of 47 ohms <sup>§</sup> ; left channel |
| (Ring)   | Right       | 1-volt peak-to-peak audio signal with an impedance of 47 ohms; right channel              |

Connector type: Stereo miniature phono plug (3.6 mm)

This connector is present on the Macintosh SE/30, Classic, Classic II, II, IIfx, IIfx, IIfx, Quadra 700, Quadra 900, LC, IIsi, Portable, and PowerBook series.

The internal speaker is disabled when this connector is in use.

<sup>†</sup> The PowerBook 100 outputs a monaural signal on the left and right channels.

<sup>§</sup> The Macintosh Portable and PowerBook series produce a 0.75-volt peak-to-peak signal.



# Macintosh Family Computers

## Computer Ports

### Microphone Input Connector

| Pin      | Signal Name | Signal Description  |
|----------|-------------|---|
| (Tip)    | +8V         | +8 volts for powering electret microphone <sup>†</sup>              |
| (Ring)   | Right       | Audio input with a maximum amplitude of 20 mV at 600 ohms impedance |
| (Sleeve) | GND         | Signal ground   |

Connector type: Stereo miniature phono plug (3.6 mm)

This connector is present on the Macintosh LC, IIsx, Classic II, Quadra 700, Quadra 900, and PowerBook 140/170.

<sup>†</sup> Do not connect any device other than the Macintosh microphone into the microphone input connector. The connector provides +8 volts for the microphone. Connecting incompatible devices could damage the device or computer.

### Line Input Connectors

| Pin      | Signal Description | Pin   | Signal Description |
|----------|--------------------|-------|--------------------|
| (Sleeve) | Digital ground     | (Tip) | Audio input        |

Connector type: RCA phono plug

This connector is present on the Macintosh Quadra 900 only. Two connectors are provided—right and left channel. The stereo information will be internally mixed to yield a monaural signal.

# Macintosh Family Computers

## Computer Ports

### External Video Connector

| Pin   | Signal Name | Signal Description               |
|-------|-------------|----------------------------------|
| 1     | RED.GND     | Red video ground                 |
| 2     | RED.VID     | Red video                        |
| 3     | CSYNC/      | Composite sync                   |
| 4     | MON.ID1     | Monitor ID, bit 1                |
| 5     | GRN.VID     | Green video                      |
| 6     | GRN.GND     | Green video ground               |
| 7     | MON.ID2     | Monitor ID, bit 2                |
| 8     | NC          | No connection                    |
| 9     | BLU.VID     | Blue video                       |
| 10    | MON.ID3     | Monitor ID, bit 3                |
| 11    | C&VSYNC GND | Composite & vertical sync ground |
| 12    | VSYSN/      | Vertical sync                    |
| 13    | BLU.GND     | Blue video ground                |
| 14    | HSYNC.GND   | Horizontal sync ground           |
| 15    | HSYSN/      | Horizontal sync                  |
| Shell | CHASSIS GND | Chassis ground                   |

Connector type: DA-15 male

This connector is present on the Macintosh LC, IIfx, Quadra 700, Quadra 900, and IIsx. All Apple-manufactured Macintosh monitors are supported on the Macintosh Quadra 700 and 900. All Apple-manufactured monitors, except the Apple Two-Page Monochrome Display, are supported on the Macintosh LC, IIfx, and IIsx.

# Macintosh Family Computers

## Computer Ports

### External Video Connector – Macintosh Portable

| Pin | Signal Name | Signal Description                  |
|-----|-------------|-------------------------------------|
| 1   | FPDATA(0)   | Flat panel display data bus (bit 0) |
| 2   | FPDATA(1)   | Flat panel display data bus (bit 1) |
| 3   | +5V         | +5 volts DC                         |
| 4   | FPDATA(2)   | Flat panel display data bus (bit 2) |
| 5   | FPDATA(3)   | Flat panel display data bus (bit 3) |
| 6   | FPDATA(4)   | Flat panel display data bus (bit 4) |
| 7   | GND         | Ground                              |
| 8   | +5V         | +5 volts DC                         |
| 9   | GND         | Ground                              |
| 10  | FPDATA(5)   | Flat panel display data bus (bit 5) |
| 11  | FPDATA(6)   | Flat panel display data bus (bit 6) |
| 12  | FPDATA(7)   | Flat panel display data bus (bit 7) |
| 13  | BATTVOLTAGE | Direct connect to main battery      |
| 14  | FLM         | Flat panel new frame sync           |
| 15  | CL2/        | Flat panel display data clock       |

Connector type: DA-15 male



# Macintosh Family Computers

## Computer Ports

### External Disk Drive Connector – DB-19

| Pin | Signal Name | Signal Description   |
|-----|-------------|----------------------|
| 1   | GND         | Signal ground        |
| 2   | GND         | Signal ground        |
| 3   | GND         | Signal ground        |
| 4   | GND         | Signal ground        |
| 5   | -12V        | -12 volts DC         |
| 6   | +5V         | +5 volts DC          |
| 7   | +12V        | +12 volts DC         |
| 8   | +12V        | +12 volts DC         |
| 9   | NC          | No connection        |
| 10  | PWM         | Motor speed control  |
| 11  | PH0         | Command control line |
| 12  | PH1         | Command control line |
| 13  | PH2         | Command control line |
| 14  | PH3         | Command control line |
| 15  | WRREQ/      | Write request        |
| 16  | HDSEL       | Head select          |
| 17  | ENBL2/      | Read line enable     |
| 18  | RD          | Read data            |
| 19  | WR          | Write data           |

Connector type: DB-19 male

This connector is present on all Macintosh computers except the Macintosh II, IIfx, IIfx, Quadra 700, Quadra 900, and the PowerBook series.

A Macintosh 400K External Drive can be connected to the Macintosh 128K, 512K, 512K enhanced, Plus, SE, and Portable.

A Macintosh 800K External Drive or an Apple 3.5 Drive can be connected to the Macintosh 512K enhanced, Plus, SE, SE/30, Classic, Classic II, IIfx, IIfx, IIfx, LC, and Portable.

An Apple SuperDrive can be connected to the Macintosh SE (with the SuperDrive upgrade), SE/30, Classic, Classic II, IIfx, IIfx, IIfx, LC, and Portable.

An Apple Hard Disk 20 can be connected to a Macintosh 512K, 512K enhanced, Plus, and SE.



# Macintosh Family Computers

## Computer Ports

### External Disk Drive Connector – HDI-20

| Pin | Signal Name | Signal Description    |
|-----|-------------|-----------------------|
| 1   | GND         | Signal ground         |
| 2   | GND         | Signal ground         |
| 3   | GND         | Signal ground         |
| 4   | GND         | Signal ground         |
| 5   | NC          | No connection         |
| 6   | +5V         | +5 volts DC           |
| 7   | +5V         | +5 volts DC           |
| 8   | +5V         | +5 volts DC           |
| 9   | +5V         | +5 volts DC           |
| 10  | NC          | No connection         |
| 11  | PH0         | Phase 0               |
| 12  | PH1         | Phase 1               |
| 13  | PH2         | Phase 2               |
| 14  | PH3         | Phase 3               |
| 15  | WREQ/       | Write request         |
| 16  | HDSEL       | Head select           |
| 17  | ENBL2/      | External drive select |
| 18  | RD          | Read data             |
| 19  | WR          | Write data            |
| 20  | NC          | Not connected         |

Connector: 20-pin high-density interconnect (HDI-20)

This connector is present on the PowerBook 100.

# Macintosh Family Computers

## Interface Cards

### Macintosh Display Cards 4/8, 8/24, and 8/24•GC

| Pin   | Signal Name | Signal Description               |
|-------|-------------|----------------------------------|
| 1     | RED.GND     | Red video ground                 |
| 2     | RED.VID     | Red video                        |
| 3     | CSYNC/      | Composite sync                   |
| 4     | MON.ID1     | Monitor ID, bit 1                |
| 5     | GRN.VID     | Green video                      |
| 6     | GRN.GND     | Green video ground               |
| 7     | MON.ID2     | Monitor ID, bit 2                |
| 8     | NC          | No connection                    |
| 9     | BLU.VID     | Blue video                       |
| 10    | MON.ID3     | Monitor ID, bit 3                |
| 11    | C&VSYNC GND | Composite & vertical sync ground |
| 12    | VSYSN/      | Vertical sync                    |
| 13    | BLU.GND     | Blue video ground                |
| 14    | HSYNC.GND   | Horizontal sync ground           |
| 15    | HSYNC/      | Horizontal sync                  |
| Shell | CHASSIS GND | Chassis ground                   |

Connector type: DA-15 male

These cards support all present Apple-manufactured Macintosh monitors.

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. **DO NOT** connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to any Macintosh Display Card.

# Macintosh Family Computers

## Interface Cards

### Macintosh II High-Resolution and 1-bit Monochrome Video Cards

| Pin | Signal Description  | Pin      | Signal Description |
|-----|---------------------|----------|--------------------|
| 1   | Red signal ground   | 9        | Analog blue video  |
| 2   | Analog red video    | 10       | No connection      |
| 3   | Composite sync      | 11       | No connection      |
| 4   | Sync signal ground  | 12       | No connection      |
| 5   | Analog green video  | 13       | Blue signal ground |
| 6   | Green signal ground | 14       | No connection      |
| 7   | No connection       | 15       | No connection      |
| 8   | No connection       | (Shield) | Shield ground      |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. **DO NOT** connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the Video or Monochrome Cards.



# Macintosh Family Computers

## Interface Cards

### Apple Macintosh Portrait Display and Apple Two-Page Monochrome Monitor Video Cards

| Pin   | Signal Name | Signal Description               |
|-------|-------------|----------------------------------|
| 1     | RED.GND     | Red video ground                 |
| 2     | RED.VID     | Red video                        |
| 3     | CSYNC/      | Composite sync                   |
| 4     | MON.ID1     | Monitor ID, bit 1                |
| 5     | GRN.VID     | Green video                      |
| 6     | GRN.GND     | Green video ground               |
| 7     | MON.ID2     | Monitor ID, bit 2                |
| 8     | NC          | No connection                    |
| 9     | BLU.VID     | Blue video                       |
| 10    | MON.ID3     | Monitor ID, bit 3                |
| 11    | C&VSYNC GND | Composite & vertical sync ground |
| 12    | VSYNC/      | Vertical sync                    |
| 13    | BLU.GND     | Blue video ground                |
| 14    | HSYNC.GND   | Horizontal sync ground           |
| 15    | HSYNC/      | Horizontal sync                  |
| Shell | CHASSIS GND | Chassis ground                   |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. DO NOT connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the Portrait Display or Two-Page Monochrome Monitor video card.



# Macintosh Family Computers

## Interface Cards

### Apple Macintosh Portrait Display and Apple Two-Page Monochrome Monitor Video Cards (Obsolete Version)

| Pin   | Signal Description     |
|-------|------------------------|
| A1    | Monochrome video       |
| A2    | No connection          |
| A3    | No connection          |
| 1     | Horizontal sync return |
| 2     | Vertical sync          |
| 3     | Sense #3               |
| 4     | Sense ground           |
| 5     | Composite sync         |
| 6     | Horizontal sync        |
| 7     | Vertical sync return   |
| 8     | Sense #2               |
| 9     | Sense #1               |
| 10    | Composite sync return  |
| Shell | Shell ground           |

Connector type: 13-pin, mixed-contact, D-type (Dartech FM-13W3S male or equivalent)

# Macintosh Family Computers

## Interface Cards

### EtherTalk Interface and EtherTalk NB Cards

| Pin | Signal Description   | Pin | Signal Description   |
|-----|----------------------|-----|----------------------|
| 1   | Shield               | 9   | Collision presence - |
| 2   | Collision presence + | 10  | Transmit -           |
| 3   | Transmit +           | 11  | Reserved             |
| 4   | Reserved             | 12  | Receive -            |
| 5   | Receive +            | 13  | Power                |
| 6   | Power return         | 14  | Reserved             |
| 7   | Reserved             | 15  | Reserved             |
| 8   | Reserved             |     |                      |

Connector type: DA-15 male

This connector supports thick coaxial cable with the use of an optional transceiver (not available from Apple).

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, IIIfx, III Plus, or Macintosh II video cards. **DO NOT** connect an Apple IIc, IIGS, IIIfx, III Plus, or Macintosh II video card device or cable to the EtherTalk Interface Card.

### TokenTalk NB Interface Card

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1   | Receive data       | 6   | Receive data       |
| 2   | No connection      | 7   | No connection      |
| 3   | No connection      | 8   | No connection      |
| 4   | No connection      | 9   | Transmit data      |
| 5   | Transmit data      |     |                    |

Connector type: DE-9 male

# Macintosh Family Computers

## Interface Cards

### Coax/Twinax and EtherTalk NB Interface Cards – Coax Connector

| Pin      | Signal Name | Signal Description    |
|----------|-------------|-----------------------|
| (Tip)    | CX+         | Transmit/receive data |
| (Sleeve) | CX-         | Signal ground         |

Connector type: BNC male

### Coax/Twinax Interface Card – Twinax Connector

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1   | No connection      | 9   | No connection      |
| 2   | No connection      | 10  | No connection      |
| 3   | No connection      | 11  | No connection      |
| 4   | No connection      | 12  | No connection      |
| 5   | No connection      | 13  | No connection      |
| 6   | No connection      | 14  | "B" twinax signal  |
| 7   | "A" twinax signal  | 15  | No connection      |
| 8   | No connection      |     |                    |

Connector type: DE-9 female



# Macintosh Family Computers

## Interface Cards

### Serial NB Interface Card (Pins 1-20)

| Pin | Signal Name | Signal Description                  |
|-----|-------------|-------------------------------------|
| 1   | +CA1F       | X.21 control, +CHA1, output         |
| 2   | 232TXDA1    | Transmit data, CHA1, RS-232, output |
| 3   | -CA1F       | X.21 control, -CHA1, output         |
| 4   | 1RTSA       | Ready To Send, CHA1, RS-232, output |
| 5   | 1CTSA       | Clear To Send, CHA1, RS-232, input  |
| 6   | +CB1F       | X.21 control, +CHB1, output         |
| 7   | 232TXDB1    | Transmit data, CHB1, RS-232, output |
| 8   | -CB1F       | X.21 control, -CHB1, output         |
| 9   | 1RTSB       | Ready To Send, CHB1, RS-232, output |
| 10  | 1CTSB       | Clear To Send, CHB1, RS-232, input  |
| 11  | +IB1        | X.21 indication, +CHB1, input       |
| 12  | 232TXDA2    | Transmit data, CHA2, RS-232, output |
| 13  | 2RXDA       | Receive data, CHA2, RS-232, input   |
| 14  | 2RTSA       | Ready To Send, CHA2, RS-232, output |
| 15  | 2CTSA       | Clear To Send, CHA2, RS-232, input  |
| 16  | +IA1        | X.21 indication, +CHA1, input       |
| 17  | 232TXDB2    | Transmit data, CHB2, RS-232, output |
| 18  | 2RXDB       | Receive data, CHB2, RS-232, input   |
| 19  | 2RTSB       | Ready To Send, CHB2, RS-232, output |
| 20  | 2CTSB       | Clear To Send, CHB2, RS-232, input  |



# Macintosh Family Computers

## Interface Cards

### Serial NB Interface Card (Pins 21-40)

| Pin | Signal Name | Signal Description                   |
|-----|-------------|--------------------------------------|
| 21  | +422TXCA1   | +Transmit clock, CHA1, RS-422, input |
| 22  | -422TXCA1   | -Transmit clock, CHA1, RS-422, input |
| 23  | +422RXDA1   | +Receive data, CHA1, RS-422, input   |
| 24  | -422RXDA1   | -Receive data, CHA1, RS-422, input   |
| 25  | +422RXCA1   | +Receive clock, CHA1, RS-422, input  |
| 26  | -422RXCA1   | -Receive clock, CHA1, RS-422, input  |
| 27  | +422TXDA1   | +Transmit data, CHA1, RS-422, output |
| 28  | -422TXDA1   | -Transmit data, CHA1, RS-422, output |
| 29  | +422TXCB1   | +Transmit clock, CHB1, RS-422, input |
| 30  | -422TXCB1   | -Transmit clock, CHB1, RS-422, input |
| 31  | +422RXDB1   | +Receive data, CHB1, RS-422, input   |
| 32  | -422RXDB1   | -Receive data, CHB1, RS-422, input   |
| 33  | +422RXCB1   | +Receive clock, CHB1, RS-422, input  |
| 34  | -422RXCB1   | -Receive clock, CHB1, RS-422, input  |
| 35  | +422TXDB1   | +Transmit data, CHB1, RS-422, output |
| 36  | -422TXDB1   | -Transmit data, CHB1, RS-422, output |
| 37  | GND_6       | Extra ground                         |
| 38  | 2TXCA       | Transmit clock, CHA2, RS-232, input  |
| 39  | 2RXCA       | Receive clock, CHA2, RS-232, input   |
| 40  | 2RXCB       | Receive clock, CHB2, RS-232, input   |

# Macintosh Family Computers

## Interface Cards

### Serial NB Interface Card (Pins 41-62)

| Pin | Signal Name | Signal Description  |
|-----|-------------|---|
| 41  | GND_5       | Extra ground  |
| 42  | 2TXCB       | Transmit clock, CHB2, RS-232, input                       |
| 43  | 1DSRA       | Data Set Ready, CHA1, RS-232, input                       |
| 44  | 1DCDA/-IA1  | Data Carrier Detect, RS-232/X.21 indication, -CHA1, input |
| 45  | 1DTRA       | Data Terminal Ready, CHA1, RS-232, output                 |
| 46  | 1RIA        | Ring Indicator, CHA1, RS-232, input                       |
| 47  | GND_4       | CHB2 ground   |
| 48  | 1DSRB       | Data Set Ready, CHB1, RS-232, input                       |
| 49  | 1DCDB/-IB1  | Data Carrier Detect, RS-232/X.21 indication, -CHB1, input |
| 50  | 1DTRB       | Data Terminal Ready, CHB1, RS-232, output                 |
| 51  | 1RIB        | Ring Indicator, CHB1, RS-232, input                       |
| 52  | GND_3       | CHA2 ground   |
| 53  | 2DSRA       | Data Set Ready, CHA2, RS-232, input                       |
| 54  | 2DCDA       | Data Carrier Detect, CHA2, RS-232, input                  |
| 55  | 2DTRA       | Data Terminal Ready, CHA2, RS-232, output                 |
| 56  | 2RIA        | Ring Indicator, CHA2, RS-232, input                       |
| 57  | GND_2       | CHB1 ground   |
| 58  | 2DSRB       | Data Set Ready, CHB2, RS-232, input                       |
| 59  | 2DCDB       | Data Carrier Detect, CHB2, RS-232, input                  |
| 60  | 2DTRB       | Data Terminal Ready, CHB2, RS-232, output                 |
| 61  | 2RIB        | Ring Indicator, CHB2, RS-232, input                       |
| 62  | GND_1       | CHA1 ground   |

Connector type: DB-62 male

# Macintosh Family Computers

## Peripheral Cable Guides

### Macintosh Plus and Later Peripheral Cable Guide

|   | Service/Engineering<br>Part Number                         | Model #                         | Cable<br>Color                            |
|---|--|---------------------------------|---|
| StyleWriter<br>ImageWriter II and II/L<br>ImageWriter LQ<br>Apple Personal Modem<br>Data Modem 2400<br>AppleFax Modem | 590-0552<br>or<br>590-0340*                                | M0197<br><br>M0187              | Smoke<br><br>Beige                        |
| ImageWriter and IW 15-Inch<br>AppleLine<br>Cluster Controller   | 590-0169<br>and<br>699-0430<br>590-0553<br>or<br>590-0341* | M0150<br><br>M0199<br><br>M0189 | Medium<br>brown<br><br>Smoke<br><br>Beige |
| Modem 300 and 1200  | 590-0197<br>and<br>699-0430<br>590-0553<br>or<br>590-0341* | M0170<br><br>M0199<br><br>M0189 | Medium<br>brown<br><br>Smoke<br><br>Beige |
| SCSI Devices – System Cable   | 658-8031<br>590-0305<br>or<br>590-0345*                    | M0206                           | Smoke<br><br>Beige                        |
| SCSI Devices – Peripheral<br>Interface Cable (Male to Male)   | 658-8034<br>590-0306<br>or<br>590-0346*                    | M0207                           | Smoke<br><br>Beige                        |
| SCSI Devices – Cable Extender<br>(Male to Female)   | 658-8033<br>590-0307<br>or<br>590-0347*                    | M0208                           | Smoke<br><br>Beige                        |
| SCSI Devices – Terminator   | 658-8032<br>590-0304<br>or<br>590-0344                     | M0209                           | Smoke<br><br>Beige                        |

\* Indicates cable is obsolete



# Macintosh Family Computers

## Peripheral Cable Guides

### Macintosh 128K, 512K, and 512K enhanced Peripheral Cable Guide

|  | Service/Engineering<br>Part Number | Model #        | Cable<br>Color  |
|--|------------------------------------|----------------|-----------------|
| ImageWriter II and II/L<br>ImageWriter LQ<br>Apple Personal Modem<br>Data Modem 2400 | 590-0551<br>or<br>590-0332*        | M0196<br>M0185 | Smoke<br>Beige  |
| ImageWriter and IW 15-Inch<br>AppleLine<br>Cluster Controller                        | 590-0169                           | M0150          | Medium<br>brown |
| Modem 300 and 1200   | 590-0197                           | M0170          | Medium<br>brown |

\* Indicates cable is obsolete



# Apple II Family Computers

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# Apple II Family Computers

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# Apple II Family Computers

## Introduction

This section contains the specifications for all the built-in interfaces and interface card connectors for the Apple II family of computers. Built-in interfaces are covered first, followed by interface cards. Illustrations at the beginning of the section show the locations of the built-in interface connectors.

### Notes:

A slash (/) after the signal name indicates that the signal is valid when the signal is low.

The connector specified is for the cable end, not the computer port.

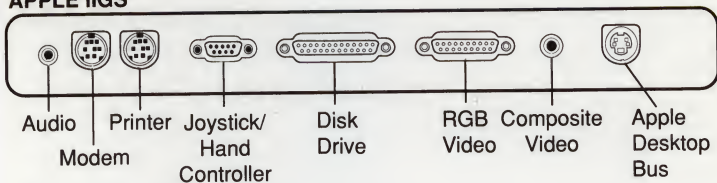
The recommended interface card switch settings are in bold.

In the peripheral connections tables, accessory kit part numbers followed by an asterisk (\*) include items in addition to the cable (software and/or manuals, for example).

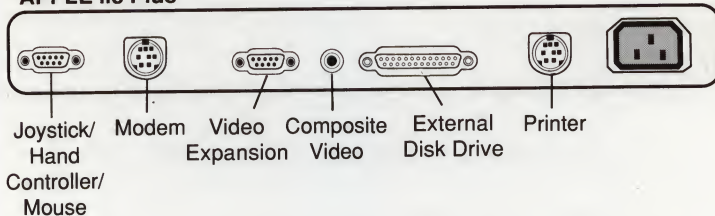
# Apple II Family Computers

## Computer Port Locations

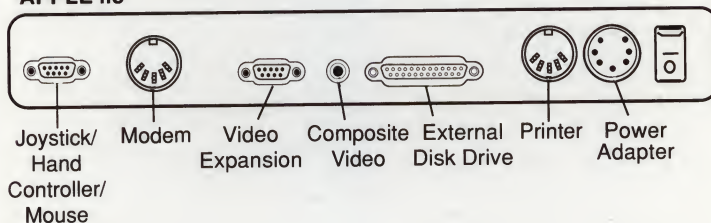
### APPLE IIGS



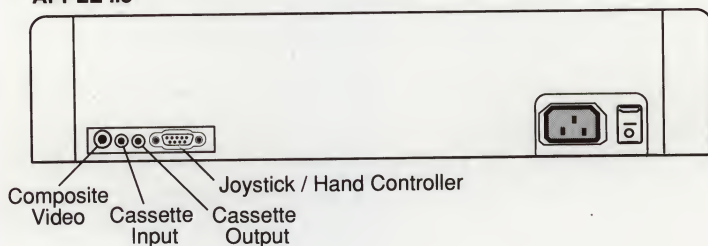
### APPLE IIc Plus



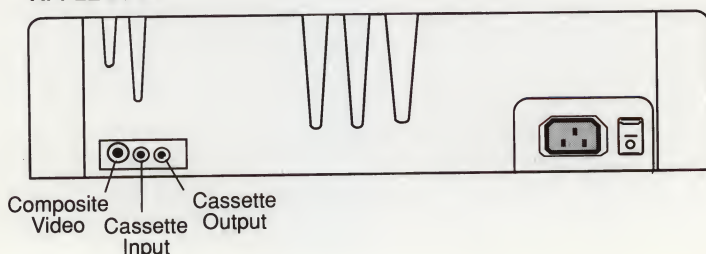
### APPLE IIc



### APPLE IIe



### APPLE II / II+





# Apple II Family Computers

## Apple IIGS Computer Ports

### Sound Input/Output Connector

| Pin | Signal Description  | Pin | Signal Description |
|-----|---------------------|-----|--------------------|
| 1   | A/D converter input | 5   | Channel address 1  |
| 2   | Analog ground       | 6   | Channel strobe/    |
| 3   | Analog output       | 7   | Channel address 2  |
| 4   | Channel address 0   |     |                    |

Connector type: 7-pin Molex

This connector (J25) is located on the logic board, near the right-front side of the computer just below the memory expansion connector. Connector J25 is not shown in the illustration. Pin 1 is located at the front of the logic board.

### Audio Connector

| Pin | Signal Description |
|-----|--------------------|
| 1   | Signal ground      |
| 2   | Earphone 1         |
| 3   | Earphone 2         |

Connector type: Stereo miniature phono plug (3.66 mm)

### Composite Video Connector

| Pin      | Signal Description   | Pin   | Signal Description   |
|----------|----------------------|-------|----------------------|
| (Sleeve) | System common ground | (Tip) | NTSC composite video |

Connector type: RCA phono plug

# Apple II Family Computers

## Apple IIGS Computer Ports

### Modem and Printer Connectors

| Pin | Signal Name | Signal Description    |
|-----|-------------|-----------------------|
| 1   | DTR         | Data Terminal Ready   |
| 2   | HSKi        | Handshake in          |
| 3   | TX Data -   | Transmit Data -       |
| 4   | GND         | Signal ground         |
| 5   | RX Data -   | Receive Data -        |
| 6   | TX Data +   | Transmit Data +       |
| 7   | GPI         | General-Purpose Input |
| 8   | RX Data +   | Receive Data +        |

Connector type: Mini DIN-8 male

All signals are RS-422.

Factory defaults:

PRINTER port (slot 1) defaults to 9600 baud, 8 data bits, no parity, 1 stop bit, unlimited line length, LF after CR, DCD and DSR/DTR handshake, no echoing, and no buffering.

MODEM port (slot 2) defaults to 1200 baud, 8 data bits, no parity, 1 stop bit, unlimited line length, no LF after CR, DCD and DSR/DTR handshake, no echoing, and no buffering.

### Apple Desktop Bus Connector

| Pin | Signal Name | Signal Description     |
|-----|-------------|------------------------|
| 1   | Data        | Bidirectional data bus |
| 2   | NC          | Reserved               |
| 3   | Power       | +5 volts               |
| 4   | Ground      | Signal ground          |

Connector type: Mini DIN-4 male

Total length of cables should not exceed 16 feet (5 meters).

# Apple II Family Computers

## Apple IIgs Computer Ports

### Disk Drive Connector

| Pin | Signal Name | Signal Description             |
|-----|-------------|--------------------------------|
| 1   | GND         | Signal ground                  |
| 2   | GND         | Signal ground                  |
| 3   | GND         | Signal ground                  |
| 4   | 3.5DISK     | 3.5- or 5.25-inch drive select |
| 5   | -12V        | -12 volts DC                   |
| 6   | +5V         | +5 volts DC                    |
| 7   | +12V        | +12 volts DC                   |
| 8   | +12V        | +12 volts DC                   |
| 9   | DR2         | Drive 2 select                 |
| 10  | WRPROTECT   | Write-protect input            |
| 11  | Phase 0     | Motor phase 0 output           |
| 12  | Phase 1     | Motor phase 1 output           |
| 13  | Phase 2     | Motor phase 2 output           |
| 14  | Phase 3     | Motor phase 3 output           |
| 15  | WREQ        | Write request                  |
| 16  | HDSEL       | Head select                    |
| 17  | DR1         | Drive 1 select                 |
| 18  | RDDATA      | Read data input                |
| 19  | WDATA       | Write data output              |

Connector type: DB-19 male

The Apple 5.25 Drive, UniDisk 5.25, Disk IIc, Apple 3.5 Drive, or UniDisk 3.5 may be connected to this connector.



# Apple II Family Computers

## Apple IIGS Computer Ports

### RGB Video Connector

| Pin      | Signal Name | Signal Description                 |
|----------|-------------|------------------------------------|
| 1        | GND         | Red signal ground                  |
| 2        | RED         | Red analog video                   |
| 3        | COMP        | Composite sync                     |
| 4        | NC          | No connection                      |
| 5        | GREEN       | Green analog video                 |
| 6        | GND         | Green signal ground                |
| 7        | -5V         | -5 volts DC                        |
| 8        | +12V        | +12 volts DC                       |
| 9        | BLUE        | Blue analog video                  |
| 10       | NC          | No connection                      |
| 11       | SOUND       | Analog sound (1 volt peak-to-peak) |
| 12       | NTSC/PAL    | Composite video                    |
| 13       | GND         | Blue signal ground                 |
| 14       | NC          | No connection                      |
| 15       | NC          | No connection                      |
| (Shield) | GND         | System ground                      |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as those on the DA-15 of the Apple IIc, III, III Plus; Macintosh II video cards; or the EtherTalk Interface Card. **DO NOT** connect an Apple IIc, III or III Plus; Macintosh II video card; or EtherTalk Interface Card device or cable to the Apple IIGS.



# Apple II Family Computers

## Apple IIGS Computer Ports

### Joystick/Hand Controller Connector

| Pin | Signal Name | Signal Description        |
|-----|-------------|---------------------------|
| 1   | SW1         | Switch input 1/Option key |
| 2   | +5V         | +5 volts                  |
| 3   | GND         | Signal ground             |
| 4   | PDL2        | Analog input 2            |
| 5   | PDL0        | Analog input 0            |
| 6   | SW2         | Switch input 2            |
| 7   | SW0         | Switch 0/Open Apple key   |
| 8   | PDL1        | Analog input 1            |
| 9   | PDL3        | Analog input 3            |

Connector type: DE-9 male

These signals are also available on a 16-pin DIP socket labeled GAME I/O (J21) inside the case. This socket has the same pinouts as the Apple II/II Plus game controller connector.

# Apple II Family Computers

## Apple IIc/IIc Plus Computer Ports

### Modem and Printer Connectors – Mini DIN-5

| Pin | Signal Name | Signal Description  |
|-----|-------------|---------------------|
| 1   | DTR         | Data Terminal Ready |
| 2   | TD          | Transmit Data       |
| 3   | GND         | Signal ground       |
| 4   | RD          | Receive Data        |
| 5   | DSR         | Data Set Ready      |

Connector type: 5-pin male DIN

This connector is present on the Apple IIc.

Factory defaults:

PRINTER port (slot 1) defaults to 9600 baud, 8 bits, no parity, 2 stop bits, 80 characters per line, LF after CR, hardware handshake.

MODEM port (slot 2) defaults to 300 baud, 8 bits, no parity, 1 stop bit, 80 characters per line, no LF after CR. DTR is an output. DSR is an input.

# Apple II Family Computers

## Apple IIc/IIc Plus Computer Ports

### Modem and Printer Connectors – Mini DIN-8

| Pin | Signal Name | Signal Description |
|-----|-------------|--------------------|
| 1   | HSKo        | Handshake out      |
| 2   | HSKi        | Handshake in       |
| 3   | TXD-        | Transmit Data -    |
| 4   | GND         | Signal ground      |
| 5   | RXD-        | Receive Data       |
| 6   | TXD+        | Transmit Data +    |
| 7   | NC          | No connection      |
| 8   | RXD+        | Receive Data +     |

Connector type: Mini DIN-8

This connector is present on the Apple IIc Plus.

All signals are RS-422.

Factory defaults:

PRINTER port (slot 1) defaults to 9600 baud, 8 bits, no parity, 2 stop bits, 80 characters per line, LF after CR, hardware handshake.

MODEM port (slot 2) defaults to 300 baud, 8 bits, no parity, 1 stop bit, 80 characters per line, no LF after CR. DTR is an output. DSR is an input.

To connect DE-9 cables (used with the Apple IIc) to the Mini DIN-8 port, use adapter cable 590-0553/699-0430 (smoke) or 590-0341 (beige).

# Apple II Family Computers

## Apple IIc/IIc Plus Computer Ports

### Joystick/Hand Controller/Mouse Connector

| Pin | Signal Name         | Signal Description   |
|-----|---------------------|--|
| 1   | MOUSEID/<br>GAMESW1 | Mouse identifier; when active, disables hand controller timer<br>Switch input 1                                  |
| 2   | +5V                 | +5 volts, 100-mA maximum current drain   |
| 3   | GND                 | System ground  |
| 4   | XDIR<br>NC          | Mouse x-direction indicator<br>No connection   |
| 5   | XMOVE<br>PDL0       | Mouse x-movement interrupt<br>Hand controller input; connected through a 150 K-ohm variable resistor to +5 volts |
| 6   | NC                  | No connection  |
| 7   | MSW/<br>GAMESW0     | Mouse button<br>Switch input 0   |
| 8   | YDIR<br>PDL1        | Mouse y-direction indicator<br>See pin 5   |
| 9   | YMOVE<br>NC         | Mouse y-movement interrupt<br>No connection  |

Connector type: DE-9 male

The signal name and description listed first applies to a mouse. The other signal name and description applies to a hand controller or joystick.



# Apple II Family Computers

## Apple IIc/IIc Plus Computer Ports

### Video Expansion Connector

| Pin | Signal Name | Signal Description   |
|-----|-------------|--|
| 1   | VIDEO       | Text signal from GLU   |
| 2   | 14M         | 14-MHz timing signal from the system oscillator                |
| 3   | SYNC/       | Display sync signal from IOU pin 39                            |
| 4   | SEGB        | Display vertical counter bit from IOU pin 4                    |
| 5   | 1VSOUND     | One-volt sound signal from AUD pin 5                           |
| 6   | LDPS/       | Video shift register load enable from TMG pin 12               |
| 7   | WNDW/       | Active area display blanking                                   |
| 8   | +12V        | +12 volts, 300-mA maximum                                      |
| 9   | PRAS/       | RAM row address strobe from TMG pin 19                         |
| 10  | GR          | Graphics-mode enable from IOU pin 2                            |
| 11  | SEROUT/     | Serialized character generator output from 74LS166 (UE6) pin 1 |
| 12  | NTSC        | NTSC composite video signal from VID                           |
| 13  | GND         | Signal ground  |
| 14  | VIDD7       | Causes half-dot shift if high                                  |
| 15  | CREF        | 3.58-MHz color reference from TMG pin 3                        |

Connector type: DA-15 male

The video expansion connector is used for connecting the Apple Flat Panel Display or RF modulator.

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIGS, III, III Plus; Macintosh II video card; or EtherTalk Interface Card. **DO NOT** connect an Apple IIGS, III, III Plus; Macintosh II video card; or EtherTalk Interface Card device or cable to the Apple IIc.

# Apple II Family Computers

## Apple IIc/IIc Plus Computer Ports

### External Disk Drive Connector

| Pin | Signal Name | Signal Description   |
|-----|-------------|----------------------|
| 1   | GND         | Ground reference     |
| 2   | GND         | Ground reference     |
| 3   | GND         | Ground reference     |
| 4   | GND         | Ground reference     |
| 5   | -12V        | -12 volts            |
| 6   | +5V         | +5 volts             |
| 7   | +12V        | +12 volts            |
| 8   | +12V        | +12 volts            |
| 9   | EXTINT/     | External interrupt   |
| 10  | WRPROT      | Write-protect input  |
| 11  | PH0         | Motor phase 0 output |
| 12  | PH1         | See pin 11           |
| 13  | PH2         | See pin 11           |
| 14  | PH3         | See pin 11           |
| 15  | WRREQ/      | Write request        |
| 16  | NC          | No connection        |
| 17  | DR1/        | Drive 1 select       |
| 18  | RDDATA      | Read data input      |
| 19  | WRDATA      | Write data input     |

Connector type: DB-19 male

The Disk IIc, Apple 5.25 Drive, UniDisk 5.25, Apple 3.5 Drive, or UniDisk 3.5 may be connected to this port.

# Apple II Family Computers

## Apple IIc/IIc Plus Computer Ports

### Composite Video Connector

| Pin      | Signal Name | Signal Description   |
|----------|-------------|----------------------|
| (Tip)    | VIDEO       | NTSC composite video |
| (Sleeve) | GND         | System common ground |

Connector type: RCA phono plug

### Audio Connector

| Pin      | Signal Name | Signal Description       |
|----------|-------------|--------------------------|
| (Tip)    | AUDIO       | Audio signal             |
| (Sleeve) | GROUND      | System electrical ground |

Connector type: Monaural miniature phono plug (3.66 mm)

This connector (not shown in the illustration) is on the left side of the case near the keyboard. This connector is not present on the Apple IIc Plus. Connecting to the audio connector disables the internal speaker.

### Power Adapter Connector

| Pin | Signal Name | Signal Description |
|-----|-------------|--------------------|
| 1   | NC          | No connection      |
| 2   | GND         | Signal ground      |
| 3   | GND         | Signal ground      |
| 4   | SGND        | Shield ground      |
| 5   | +15V        | +15 volts DC       |
| 6   | +15V        | +15 volts DC       |
| 7   | NC          | No connection      |

Connector type: 7-pin male DIN

The power adapter connector connects an external power supply to the Apple IIc. The Apple IIc Plus does not require an external power supply.



# Apple II Family Computers

## Apple II/II Plus/IIe Computer Ports

### Cassette Input Connector

| Pin      | Signal Name | Signal Description                                     |
|----------|-------------|--|
| (Tip)    | DATA IN     | Audio in; one volt peak-to-peak; impedance of 12K ohms |
| (Sleeve) | GND         | System electrical ground                               |

Connector type: Monaural miniature phono plug

### Cassette Output Connector

| Pin      | Signal Name | Signal Description                   |
|----------|-------------|--------------------------------------|
| (Tip)    | DATA OUT    | Audio out; 25 mV into a 100-ohm load |
| (Sleeve) | GND         | System electrical ground             |

Connector type: Monaural miniature phono plug



# Apple II Family Computers

## Apple II/II Plus/IIe Computer Ports

### Composite Video Connector

| Pin      | Signal Name | Signal Description   |
|----------|-------------|----------------------|
| (Sleeve) | GND         | System common ground |
| (Tip)    | VIDEO       | NTSC composite video |

Connector type: RCA phono plug

Apple II and II Plus video level is adjustable from 0 to 1 volt by a 200-ohm potentiometer (not shown in the illustration) located on the logic board near the right rear of the computer. Apple IIe video level is not adjustable.

### Auxiliary Video Connector

| Pin | Signal Name | Signal Description            |
|-----|-------------|-------------------------------|
| 1   | GND         | System common ground          |
| 2   | VIDEO       | NTSC positive composite video |
| 3   | +12V        | +12 volts                     |
| 4   | +5V         | +5 volts                      |

Connector type: Molex KK100 series

This connector (not shown in the illustration) is located inside the computer on the logic board near the right rear of the computer.

Video level is not adjustable. On the Apple II/II Plus, pin 1 is at the edge of the logic board. On the Apple IIe, pin 1 is toward the front of the logic board.

# Apple II Family Computers

## Apple II/II Plus/IIe Computer Ports

### Game Controller Connector

| Pin | Signal Name  | Signal Description  |
|-----|--------------|---|
| 1   | +5V          | +5 volts, 100-mA maximum current drain  |
| 2   | PB0          | Push-button input; standard 74LS series signal levels   |
| 3   | PB1          | See pin 2   |
| 4   | PB2          | See pin 2   |
| 5   | C040 STROBE/ | General-purpose strobe output; goes low during phase zero of a read or write cycle to any address from \$C040 to \$C04F |
| 6   | GC0          | Game controller input; connected through a 150K-ohm variable resistor to +5V  |
| 7   | GC2          | See pin 6   |
| 8   | GND          | System electrical ground  |
| 9   | NC           | No connection   |
| 10  | GC1          | See pin 6   |
| 11  | GC3          | See pin 6   |
| 12  | AN3          | Annunciator; standard 74LS-series signal levels; must be buffered if used to drive other than TTL inputs                |
| 13  | AN2          | See pin 12  |
| 14  | AN1          | See pin 12  |
| 15  | AN0          | See pin 12  |
| 16  | NC           | No connection   |

Connector type: 16-pin DIP header

This connector (not shown in the illustration) is located on the logic board near the right side of the computer.

# Apple II Family Computers

## Apple II/II Plus/IIe Computer Ports

### Joystick/Hand Controller Connector

| Pin | Signal Name | Signal Description  |
|-----|-------------|---|
| 1   | PB1         | Push-button input; standard 74LS series signal levels                       |
| 2   | +5V         | +5 volts, 100-mA maximum current drain                                      |
| 3   | GND         | System electrical ground  |
| 4   | PDL2        | Hand control input; connected through a 150 K-ohm variable resistor to +5 V |
| 5   | PDL0        | See pin 4   |
| 6   | PB2         | See pin 1   |
| 7   | PB0         | See pin 1   |
| 8   | PDL1        | See pin 4   |
| 9   | PDL3        | See pin 4   |

Connector type: DE-9 Male

This connector is present only on the Apple IIe.

# Apple II Family Computers

## Apple II Interface Cards

### Communications Card Pin-outs

| Pin | Signal Name | Signal Description                    |
|-----|-------------|---------------------------------------|
| 2   | TXD         | Transmit Data                         |
| 3   | RXD         | Receive Data                          |
| 4   | RTS         | Request To Send (jumped to pin 8)     |
| 6   | DSR         | Data Set Ready (jumped to pin 20)     |
| 7   | GND         | Signal ground                         |
| 8   | DCD         | Data Carrier Detect (jumped to pin 4) |
| 20  | DTR         | Data Terminal Ready (jumped to pin 6) |

Connector type: DB-25 male

The Communications Card should be used only with low-speed devices (300 baud or below). No handshaking is available.



# Apple II Family Computers

## Apple II Interface Cards

### Super Serial Card Pin-outs

| Pin   | Signal Name | Signal Description      |
|-------|-------------|-------------------------|
| 1     | FG          | Frame Ground            |
| 2     | TXD         | Transmit Data           |
| 3     | RXD         | Receive Data            |
| 4     | RTS         | Request To Send         |
| 5     | CTS         | Clear To Send           |
| 6     | DSR         | Data Set Ready          |
| 7     | SG          | Signal Ground           |
| 8     | DCD         | Data Carrier Detect     |
| 9-18  | NC          | No connection           |
| 19    | SCTS        | Secondary Clear To Send |
| 20    | DTR         | Data Terminal Ready     |
| 21-25 | NC          | No connection           |

Connector type: DB-25 male

This card is compatible with RS-232 serial devices.

When the jumper block is installed with the arrow pointing toward MODEM, the signals are as listed above. When the jumper block is pointing toward TERMINAL, the signals are the same as the signals produced when using a modem eliminator.

# Apple II Family Computers

## Apple II Interface Cards

### Super Serial Card Switch Settings – Switch SW1 Printer Mode

|                                  | 1          | 2          | 3          | 4         | 5          | 6         | 7         |
|----------------------------------|------------|------------|------------|-----------|------------|-----------|-----------|
| <b>Baud rate</b>                 |            |            |            |           |            |           |           |
| 50                               | ON         | ON         | ON         | OFF       |            |           |           |
| 75                               | ON         | ON         | OFF        | ON        |            |           |           |
| 110                              | ON         | ON         | OFF        | OFF       |            |           |           |
| 135                              | ON         | OFF        | ON         | ON        |            |           |           |
| 150                              | ON         | OFF        | ON         | OFF       |            |           |           |
| 300                              | ON         | OFF        | OFF        | ON        |            |           |           |
| 600                              | ON         | OFF        | OFF        | OFF       |            |           |           |
| 1200                             | OFF        | ON         | ON         | ON        |            |           |           |
| 1800                             | OFF        | ON         | ON         | OFF       |            |           |           |
| 2400                             | OFF        | ON         | OFF        | ON        |            |           |           |
| 3600                             | OFF        | ON         | OFF        | OFF       |            |           |           |
| 4800                             | OFF        | OFF        | ON         | ON        |            |           |           |
| 7200                             | OFF        | OFF        | ON         | OFF       |            |           |           |
| 9600                             | <b>OFF</b> | <b>OFF</b> | <b>OFF</b> | <b>ON</b> |            |           |           |
| 19200                            | OFF        | OFF        | OFF        | OFF       |            |           |           |
| <b>Mode select</b>               |            |            |            |           |            |           |           |
| Printer                          |            |            |            |           | <b>OFF</b> | <b>ON</b> |           |
| SIC P8 emulation                 |            |            |            |           | ON         | OFF       |           |
| SIC P8A emulation                |            |            |            |           | OFF        | OFF       |           |
| <b>Handshaking<sup>†</sup></b>   |            |            |            |           |            |           |           |
| Clear To Send (Pin 5)            |            |            |            |           |            |           | <b>ON</b> |
| Secondary Clear To Send (Pin 19) |            |            |            |           |            |           | OFF       |

<sup>†</sup> Used in conjunction with Switch SW2, position 7. Switch SW2, position 7 must be set to the opposite on/off setting of switch SW1, position 7.

# Apple II Family Computers

## Apple II Interface Cards

### Super Serial Card Switch Settings – Switch SW2 Printer Mode

|                                  | 1   | 2   | 3   | 4   | 5   | 6   | 7   |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| <b>Stop bits</b>                 |     |     |     |     |     |     |     |
| 1                                | ON  |     |     |     |     |     |     |
| 2                                | OFF |     |     |     |     |     |     |
| <b>Delay after CR</b>            |     |     |     |     |     |     |     |
| 32 ms.                           |     | ON  |     |     |     |     |     |
| Disabled                         |     | OFF |     |     |     |     |     |
| <b>Line width/video</b>          |     |     |     |     |     |     |     |
| 40 columns/video on              |     |     | ON  | ON  |     |     |     |
| 72 columns/video off             |     |     | ON  | OFF |     |     |     |
| 80 columns/video off             |     |     | OFF | ON  |     |     |     |
| 132 columns/video off            |     |     | OFF | OFF |     |     |     |
| <b>Auto LF on CR</b>             |     |     |     |     |     |     |     |
| Enabled                          |     |     |     |     | ON  |     |     |
| Disabled                         |     |     |     |     | OFF |     |     |
| <b>Interrupts</b>                |     |     |     |     |     |     |     |
| Enabled                          |     |     |     |     |     | ON  |     |
| Disabled                         |     |     |     |     |     | OFF |     |
| <b>Handshaking<sup>†</sup></b>   |     |     |     |     |     |     |     |
| Clear To Send (Pin 5)            |     |     |     |     |     |     | OFF |
| Secondary Clear To Send (Pin 19) |     |     |     |     |     |     | ON  |

<sup>†</sup> Used in conjunction with Switch SW1, position 7. Switch SW1, position 7 must be set to the opposite on/off setting of switch SW2, position 7.



# Apple II Family Computers

## Apple II Interface Cards

### Super Serial Card Switch Settings – Switch SW1 Communication Mode

|                                | 1          | 2         | 3         | 4         | 5  | 6  | 7  |
|--------------------------------|------------|-----------|-----------|-----------|----|----|----|
| <b>Baud rate</b>               |            |           |           |           |    |    |    |
| 50                             | ON         | ON        | ON        | OFF       |    |    |    |
| 75                             | ON         | ON        | OFF       | ON        |    |    |    |
| 110                            | ON         | ON        | OFF       | OFF       |    |    |    |
| 135                            | ON         | OFF       | ON        | ON        |    |    |    |
| 150                            | ON         | OFF       | ON        | OFF       |    |    |    |
| 300                            | ON         | OFF       | OFF       | ON        |    |    |    |
| 600                            | ON         | OFF       | OFF       | OFF       |    |    |    |
| 1200                           | <b>OFF</b> | <b>ON</b> | <b>ON</b> | <b>ON</b> |    |    |    |
| 1800                           | OFF        | ON        | ON        | OFF       |    |    |    |
| 2400                           | OFF        | ON        | OFF       | ON        |    |    |    |
| 3600                           | OFF        | ON        | OFF       | OFF       |    |    |    |
| 4800                           | OFF        | OFF       | ON        | ON        |    |    |    |
| 7200                           | OFF        | OFF       | ON        | OFF       |    |    |    |
| 9600                           | OFF        | OFF       | OFF       | ON        |    |    |    |
| 19200                          | OFF        | OFF       | OFF       | OFF       |    |    |    |
| <b>Mode select</b>             |            |           |           |           |    |    |    |
| Communication                  |            |           |           |           | ON | ON |    |
| <b>Handshaking<sup>†</sup></b> |            |           |           |           |    |    |    |
| Clear To Send                  |            |           |           |           |    |    | ON |

<sup>†</sup> Used in conjunction with Switch SW2, position 7. Switch SW2, position 7 must be set to the opposite on/off setting of switch SW1, position 7.



# Apple II Family Computers

## Apple II Interface Cards

### Super Serial Card Switch Settings – Switch SW2 Communication Mode

|                                | 1   | 2   | 3   | 4   | 5   | 6   | 7   |
|--------------------------------|-----|-----|-----|-----|-----|-----|-----|
| <b>Stop bits</b>               |     |     |     |     |     |     |     |
| 1                              | ON  |     |     |     |     |     |     |
| 2                              | OFF |     |     |     |     |     |     |
| <b>Data bits</b>               |     |     |     |     |     |     |     |
| 8                              |     | ON  |     |     |     |     |     |
| 7                              |     | OFF |     |     |     |     |     |
| <b>Parity</b>                  |     |     |     |     |     |     |     |
| None                           |     |     | ON  | ON  |     |     |     |
| Odd                            |     |     | ON  | OFF |     |     |     |
| Even                           |     |     | OFF | OFF |     |     |     |
| <b>Auto LF on CR</b>           |     |     |     |     |     |     |     |
| Enabled                        |     |     |     |     | ON  |     |     |
| Disabled                       |     |     |     |     | OFF |     |     |
| <b>Interrupts</b>              |     |     |     |     |     |     |     |
| Enabled                        |     |     |     |     |     | ON  |     |
| Disabled                       |     |     |     |     |     | OFF |     |
| <b>Handshaking<sup>†</sup></b> |     |     |     |     |     |     |     |
| Clear To Send                  |     |     |     |     |     |     | OFF |

<sup>†</sup> Used in conjunction with Switch SW1, position 7. Switch SW1, position 7 must be set to the opposite on/off setting of switch SW2, position 7.

# Apple II Family Computers

## Apple II Interface Cards

### Serial Interface Card Pin-outs

| Pin | Signal Name | Signal Description                            |
|-----|-------------|---|
| 2   | RXD         | Receive Data                                  |
| 3   | TXD         | Transmit Data                                 |
| 4   | RTS         | Request To Send (jumpered to pin 5)           |
| 5   | CTS         | Clear To Send (jumpered to pin 4)             |
| 6   | DSR         | Data Set Ready (jumpered to pins 8 & 20)      |
| 7   | GND         | Signal ground                                 |
| 8   | DCD         | Data Carrier Detect (jumpered to pins 6 & 20) |
| 20  | DTR         | Data Terminal Ready (jumpered to pins 6 & 8)  |

Connector type: DB-25 male

This card is compatible with RS-232 serial devices.

# Apple II Family Computers

## Apple II Interface Cards

### Serial Interface Card Switch Settings

|                              | 1          | 2          | 3         | 4   | 5          | 6          | 7   |
|------------------------------|------------|------------|-----------|-----|------------|------------|-----|
| <b>Baud rate</b>             |            |            |           |     |            |            |     |
| 110                          | ON         | ON         | ON        |     |            |            |     |
| 134.5                        | OFF        | ON         | ON        |     |            |            |     |
| 300                          | ON         | OFF        | ON        |     |            |            |     |
| 1200                         | <b>OFF</b> | <b>OFF</b> | <b>ON</b> |     |            |            |     |
| 2400                         | ON         | ON         | OFF       |     |            |            |     |
| 4800                         | OFF        | ON         | OFF       |     |            |            |     |
| 9600                         | ON         | OFF        | OFF       |     |            |            |     |
| 19200                        | OFF        | OFF        | OFF       |     |            |            |     |
| <b>Carriage return delay</b> |            |            |           |     |            |            |     |
| Disabled                     |            |            |           | ON  |            |            |     |
| 1/4 second delay             |            |            |           | OFF |            |            |     |
| <b>Line width/video</b>      |            |            |           |     |            |            |     |
| 40 columns/video on          |            |            |           |     | ON         | ON         |     |
| 72 columns/video off         |            |            |           |     | OFF        | ON         |     |
| 80 columns/video off         |            |            |           |     | ON         | OFF        |     |
| 132 columns/video off        |            |            |           |     | <b>OFF</b> | <b>OFF</b> |     |
| <b>Auto LF on CR</b>         |            |            |           |     |            |            |     |
| Disabled                     |            |            |           |     |            |            | ON  |
| Enabled                      |            |            |           |     |            |            | OFF |

This card should be used only with low-speed devices (300 baud or below).

PROM P8A should be used with Qume-compatible printers. When using this PROM, the function of Switch 4 is different and the switch must be OFF.



# Apple II Family Computers

## Apple II Interface Cards

### Parallel Printer & Centronics Printer Interface Card Pin-outs

| Pin | Signal Name | Signal Description       |
|-----|-------------|--------------------------|
| 1   | GND         | System electrical ground |
| 2   | ACK         | Acknowledge input        |
| 3   | NC          | No connection            |
| 4   | F           | Not used                 |
| 5   | NC          | No connection            |
| 6   | NC          | No connection            |
| 7   | NC          | No connection            |
| 8   | STROBE      | Strobe output            |
| 9   | NC          | No connection            |
| 10  | DP0         | Data bit 0               |
| 11  | DP1         | Data bit 1               |
| 12  | DP2         | Data bit 2               |
| 13  | DP3         | Data bit 3               |
| 14  | DP4         | Data bit 4               |
| 15  | DP5         | Data bit 5               |
| 16  | DP6         | Data bit 6               |
| 17  | DP7         | Data bit 7               |
| 18  | NC          | No connection            |
| 19  | NC          | No connection            |
| 20  | GND         | System electrical ground |

Connector type: Underterminated 20-pin flat cable

Parallel interface has the P1 (341-0005) PROM that provides a linefeed after carriage return. The jumper block is not wired.

Centronics interface has the P9 (341-0019) PROM that does not provide a linefeed after carriage return. The jumper block is prewired for negative strobe and positive acknowledge.



# Apple II Family Computers

## Apple II Interface Cards

### IEEE-488 Interface Pin-outs

| Pin | Signal Name | Signal Description       |
|-----|-------------|--------------------------|
| 1   | DIO1        | Data input/output, bit 1 |
| 2   | DIO2        | Data input/output, bit 2 |
| 3   | DIO3        | Data input/output, bit 3 |
| 4   | DIO4        | Data input/output, bit 4 |
| 5   | EOI         | End Or Identify          |
| 6   | DAV         | Data Valid               |
| 7   | NRFD        | Not Ready For Data       |
| 8   | NDAC        | Not Data Accepted        |
| 9   | IFC         | Interface Clear          |
| 10  | SRQ         | Service Request          |
| 11  | ATN         | Attention                |
| 12  | SHIELD      | Earth ground             |
| 13  | DIO5        | Data input/output, bit 5 |
| 14  | DIO6        | Data input/output, bit 6 |
| 15  | DIO7        | Data input/output, bit 7 |
| 16  | DIO8        | Data input/output, bit 8 |
| 17  | REN         | Remote Enable            |
| 18  | GND         | Logic ground             |
| 19  | GND         | Logic ground             |
| 20  | GND         | Logic ground             |
| 21  | GND         | Logic ground             |
| 22  | GND         | Logic ground             |
| 23  | GND         | Logic ground             |
| 24  | GND         | Logic ground             |

Connector type: 24-pin Centronics-type male

# Apple II Family Computers

## Apple II Interface Cards

### Parallel Interface Card Pin-outs

| Pin | Signal Name | Signal Description      |
|-----|-------------|-------------------------|
| 1   | DI0         | Data in, bit 0          |
| 2   | GND         | Signal ground           |
| 3   | DI2         | Data in, bit 2          |
| 4   | GND         | Signal ground           |
| 5   | DO0         | Data out, bit 0         |
| 6   | DO1         | Data out, bit 1         |
| 7   | NC          | No connection - blocked |
| 8   | DO2         | Data out, bit 2         |
| 9   | NC          | No connection           |
| 10  | NC          | No connection           |
| 11  | DO5         | Data out, bit 5         |
| 12  | DO6         | Data out, bit 6         |
| 13  | DO7         | Data out, bit 7         |
| 14  | DI4         | Data in, bit 4          |
| 15  | STROBE      | Strobe output           |
| 16  | ACK         | Acknowledge input       |
| 17  | DI1         | Data in, bit 1          |
| 18  | DI7         | Data in, bit 7          |
| 19  | DI5         | Data in, bit 5          |
| 20  | GND         | Signal ground           |
| 21  | DI6         | Data in, bit 6          |
| 22  | DO3         | Data out, bit 3         |
| 23  | DO4         | Data out, bit 4         |
| 24  | GND         | Signal ground           |
| 25  | DI3         | Data in, bit 3          |

Connector type: DB-25 male

# Apple II Family Computers

## Apple II Interface Cards

### Parallel Interface Card Switch Settings

|                             | 1   | 2   | 3   | 4   | 5   | 6   | 7   |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|
| <b>Strobe length</b>        |     |     |     |     |     |     |     |
| 1 microsecond               | OFF | OFF | OFF |     |     |     |     |
| 3 microseconds              | ON  | OFF | OFF |     |     |     |     |
| 5 microseconds              | OFF | ON  | OFF |     |     |     |     |
| 7 microseconds              | ON  | ON  | OFF |     |     |     |     |
| 9 microseconds              | OFF | OFF | ON  |     |     |     |     |
| 11 microseconds             | ON  | OFF | ON  |     |     |     |     |
| 13 microseconds             | OFF | ON  | ON  |     |     |     |     |
| 15 microseconds             | ON  | ON  | ON  |     |     |     |     |
| <b>Strobe polarity</b>      |     |     |     |     |     |     |     |
| Positive                    |     |     |     | OFF |     |     |     |
| Negative                    |     |     |     | ON  |     |     |     |
| <b>Acknowledge polarity</b> |     |     |     |     |     |     |     |
| Positive                    |     |     |     |     | OFF |     |     |
| Negative                    |     |     |     |     | ON  |     |     |
| <b>Firmware select</b>      |     |     |     |     |     |     |     |
| Parallel Printer (No LF)    |     |     |     |     |     | OFF |     |
| Centronics                  |     |     |     |     |     | ON  |     |
| <b>Interrupts</b>           |     |     |     |     |     |     |     |
| Disabled                    |     |     |     |     |     |     | OFF |
| Enabled                     |     |     |     |     |     |     | ON  |



# Apple II Family Computers

## Apple II Interface Cards

### Apple II Video Overlay Card Pin-outs

| Pin | Signal Description |
|-----|--------------------|
| 1   | Signal Ground      |
| 2   | Blue Video         |
| 3   | Red Video          |
| 4   | No connection      |
| 5   | CSYNC              |
| 6   | No connection      |
| 7   | No connection      |
| 8   | Composite Video    |
| 9   | Green Video        |
| 10  | Signal Ground      |
| 11  | Signal Ground      |
| 12  | No connection      |
| 13  | -5 volts           |
| 14  | No connection      |
| 15  | +12 volts          |

Connector type: DA-15 male

# Apple II Family Computers

## Apple II Interface Cards

### Apple II SCSI and High-Speed SCSI Card Pin-outs

| Pin | Signal Name | Signal Description |
|-----|-------------|--------------------|
| 1   | REQ/        | Request            |
| 2   | MSG/        | Message            |
| 3   | I/O/        | Input/Output       |
| 4   | RST/        | Reset              |
| 5   | ACK/        | Acknowledge        |
| 6   | BSY/        | Busy               |
| 7   | GND         | Signal ground      |
| 8   | DB0/        | Data Bit 0         |
| 9   | GND         | Signal ground      |
| 10  | DB3/        | Data Bit 3         |
| 11  | DB5/        | Data Bit 5         |
| 12  | DB6/        | Data Bit 6         |
| 13  | DB7/        | Data Bit 7         |
| 14  | GND         | Signal ground      |
| 15  | C/D/        | Control/Data       |
| 16  | GND         | Signal ground      |
| 17  | ATN/        | Attention          |
| 18  | GND         | Signal ground      |
| 19  | SEL/        | Select             |
| 20  | DBP/        | Data Parity        |
| 21  | DB1/        | Data Bit 1         |
| 22  | DB2/        | Data Bit 2         |
| 23  | DB4/        | Data Bit 4         |
| 24  | GND         | Signal ground      |
| 25  | NC          | No connection      |

Connector type: DB-25 male

Not compatible with the Apple II or Apple II Plus.

**CAUTION:** This interface uses the same type of connector as a standard RS-232 serial interface, but it is electrically very different. DO NOT connect any RS-232 device or cable to this connector. Doing so can damage both the device and the computer.

# Apple II Family Computers

## Apple II Interface Cards

### Graphics Tablet Interface Pin-outs – Pen Connector

| Pin | Signal Name | Signal Description       |
|-----|-------------|--------------------------|
| 1   | NC          | No connection            |
| 2   | GND         | System electrical ground |
| 3   | PEN         | Pen coil                 |
| 4   | PEN         | Pen coil                 |

Connector type: DE-9 male

### Graphics Tablet Interface Pin-outs – Tablet Connector

| Pin | Signal Name | Signal Description       |
|-----|-------------|--------------------------|
| 1   | YDRIVE      | Y-axis input             |
| 2   | XDRIVE      | X-axis input             |
| 3   | NC          | No connection            |
| 4   | RESET       | Reset signal             |
| 5   | GND         | System electrical ground |
| 6   | -12V        | -12 volts DC             |

Connector type: DE-9 male



# Apple II Family Computers

## Peripheral Cable Guides

### Apple II, II Plus, and IIfx Peripheral Cable Guide

|   | Service/Engineering<br>Part Number | Model #  | Cable<br>Color |
|---|------------------------------------|--|----------------|
| ImageWriter II and II/L<br>ImageWriter LQ <sup>†</sup><br>Apple Personal Modem<br>Data Modem 2400               | 590-0555<br>or<br>590-0331         | A2C0312<br>or<br>A2C0311                                 | Smoke<br>Beige |
| ImageWriter and IW 15-Inch<br>Scribe<br>Daisy Wheel Printer<br>Color Plotter<br>AppleLine<br>Cluster Controller | 590-0037                           | A2C0352*<br>A2C0355*<br>A2C0351*<br>A2C0302*<br>NA<br>NA | Light<br>gray  |
| Modem 300 and 1200  | 590-0121                           | A2C0354*   | Beige          |
| Dot Matrix Printer with Parallel<br>Interface Card  | 590-0042                           | NA   | Varies         |
| Dot Matrix Printer with<br>Centronics Printer Card <sup>§</sup>   | 590-0036                           | NA   | Varies         |

<sup>†</sup> The ImageWriter LQ should be set for 9600 baud when used with an Apple II, II Plus, or IIfx. Set DIP switch 2, positions 1 and 2, to ON.

<sup>§</sup> Set Dot Matrix Printer switch 1 position 8 to ON to provide a line feed on receipt of a carriage return.

# Apple II Family Computers

## Peripheral Cable Guides

### Apple IIc Peripheral Cable Guide

|   | Service/Engineering<br>Part Number | Model #                                | Cable<br>Color |
|---|------------------------------------|--|----------------|
| ImageWriter II and II/L<br>ImageWriter LQ <sup>†</sup><br>Apple Personal Modem <sup>§</sup><br>Data Modem 2400 <sup>&amp;</sup> | 590-0554<br>or<br>590-0333         | A2C4313<br>or<br>A2C4312               | Smoke<br>Beige |
| ImageWriter and IW 15-Inch<br>Scribe<br>Daisy Wheel Printer<br>AppleLine<br>Color Plotter <sup>†</sup>                          | 590-0191                           | A2C4515*<br>A2C4520*<br>NA<br>A2C4510* | Beige          |
| Modem 300 and 1200 <sup>*</sup>   | 590-0192                           | A2C4505*                               | Beige          |

<sup>†</sup> The ImageWriter LQ must be set for 9600 baud when used with an Apple IIc. Set DIP switch 2, positions 1 and 2, to ON.

<sup>§</sup> Change the baud rate of the modem port on the computer to 1200 baud.

<sup>&</sup> Change the baud rate of the modem port on the computer to 2400 baud.

<sup>†</sup> Change the baud rate of the printer port on the computer to 1200 baud.

<sup>\*</sup> If a modem 1200 is being used, change the baud rate of the modem port of the computer to 1200 baud.

# Apple II Family Computers

## Peripheral Cable Guides

### Apple IIgs and IIc Plus Peripheral Cable Guide

|   | Service/Engineering<br>Part Number | Model #  | Cable<br>Color |
|---|------------------------------------|----------|----------------|
| ImageWriter II and II/L   | 590-0552                           | M0197    | Smoke          |
| ImageWriter LQ <sup>†</sup>   | or                                 |          |                |
| Apple Personal Modem  | 590-0340                           | M0187    | Beige          |
| Data Modem 2400 <sup>§</sup>  |                                    |          |                |
| ImageWriter and IW 15-Inch<br>Scribe                                    | 590-0037                           | A2C0352* | Light gray     |
| Daisy Wheel Printer   | and                                | A2C0355* |                |
| Color Plotter &   |                                    | A2C0351* |                |
| Cluster Controller  | 590-0550                           | A2C0302* | Smoke          |
|   |                                    | NA       |                |
| Modem 300 and 1200 <sup>†</sup>   | 590-0550                           | A9M0333  | Smoke          |
|   | and                                |          |                |
|   | 590-0121                           | A2C0354* | Beige          |
| Dot Matrix Printer with<br>Parallel Interface Card<br>(Apple IIgs only) | 590-0042                           | NA       | Varies         |
| Dot Matrix Printer with<br>Centronics Printer Card<br>(Apple IIgs only) | 590-0036                           | NA       | Varies         |

<sup>†</sup> The ImageWriter LQ must be set for 9600 baud when used with an Apple IIgs or IIc Plus. Set DIP switch 2, positions 1 and 2, to ON.

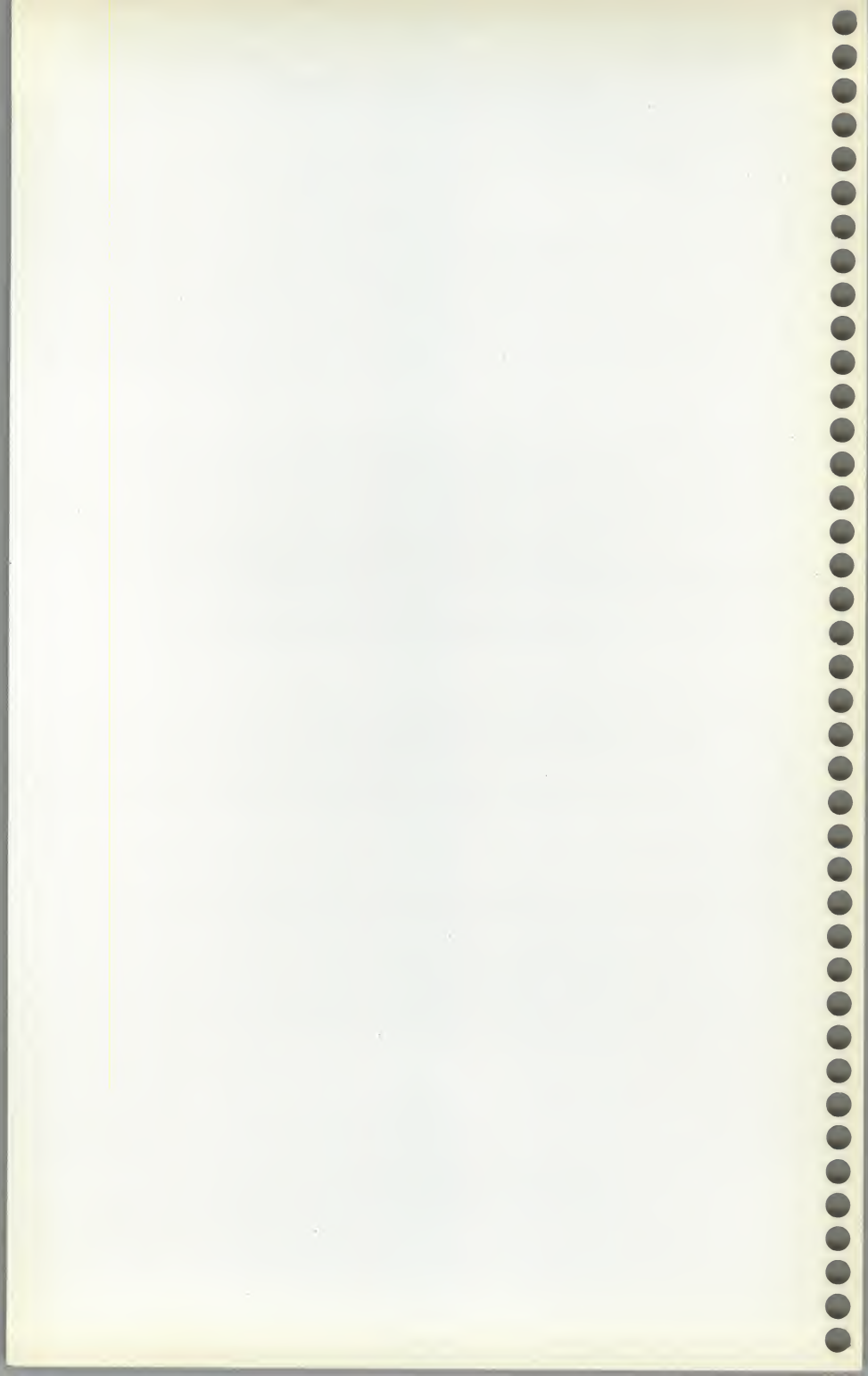
<sup>§</sup> Change the baud rate of the modem port on the computer to 2400 baud.

& Set the baud rate of the Color Plotter and printer port on the computer to 1200 baud.

<sup>†</sup> If a Modem 300 is being used, change the baud rate of the modem port of the computer to 300 baud.

\* Set Dot Matrix Printer switch 1 position 8 to ON to provide a line feed on receipt of a carriage return.





# Apple III & Lisa/Mac XL Computers

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# Apple III & Lisa/Mac XL Computers

## Introduction

This section contains the specifications for all the built-in interfaces and interface card connectors for the Apple III/III Plus and Lisa/Macintosh XL families of computers. Built-in interfaces and interface cards for the Apple III/III Plus are covered first, followed by the Lisa/Macintosh XL. Illustrations at the beginning of the section show the locations of the built-in interface connectors.

### Notes:

A slash (/) after the signal name indicates that the signal is valid when the signal is low.

The connector specified is for the cable end, not the computer port.

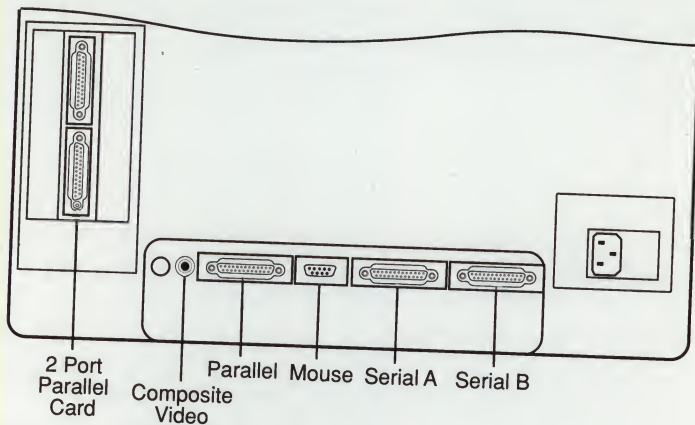
In the peripheral connections tables, accessory kit part numbers followed by an asterisk (\*) include items in addition to the cable (software and/or manuals, for example).

Accessory kit part numbers followed by a dagger (†) include a modem eliminator cable (590-0166).

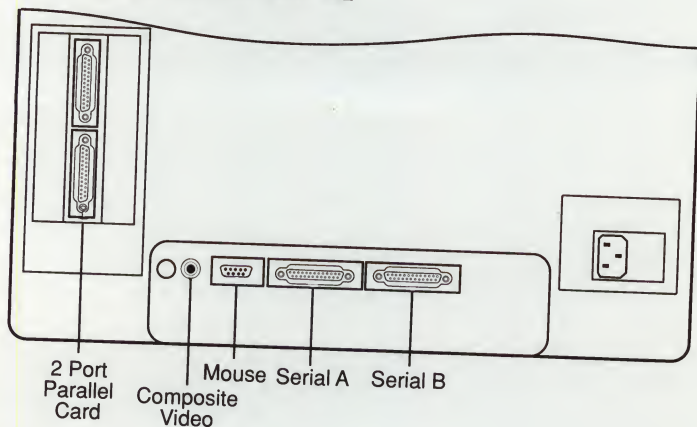
# Apple III & Lisa/Mac XL Computers

## Computer Port Locations

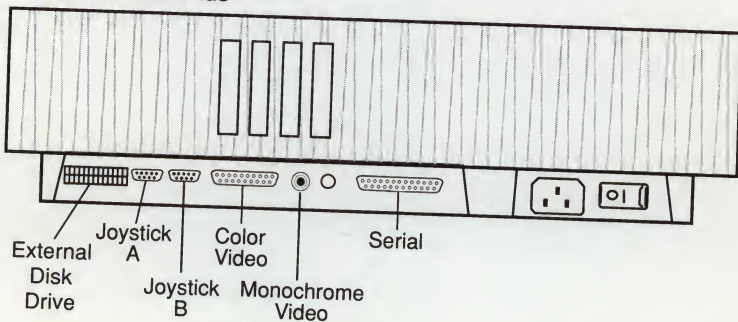
### LISA 2 AND LISA 2/5



### LISA 2/10 AND MACINTOSH XL



### APPLE III and III Plus



# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Computer Ports

### Audio Connector

| Pin      | Signal Name | Signal Description                |
|----------|-------------|-----------------------------------|
| (Tip)    | AUDIO       | .5-volt peak-to-peak audio signal |
| (Sleeve) | GND         | Signal ground                     |

Connector type: Miniature phono plug

The internal speaker is disabled when this connector is in use.

### Monochrome Video Connector

| Pin      | Signal Name | Signal Description      |
|----------|-------------|-------------------------|
| (Tip)    | BWVID       | Monochrome video signal |
| (Sleeve) | GND         | Signal ground           |

Connector type: RCA phono plug

### Serial Connector

| Pin   | Signal Name | Signal Description  |
|-------|-------------|---------------------|
| 1     | SGND        | Shield ground       |
| 2     | TXD         | Transmit Data       |
| 3     | RCD         | Receive Data        |
| 4     | RTS         | Request To Send     |
| 5     | CTS         | Clear To Send       |
| 6     | DSR         | Data Set Ready      |
| 7     | GND         | Signal ground       |
| 8     | DCD         | Data Carrier Detect |
| 9-19  | NC          | No connection       |
| 20    | DTR         | Data Terminal Ready |
| 21-25 | NC          | No connection       |

Connector type: DB-25 male

This interface is compatible with RS-232 serial devices.



# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Computer Ports

### External Disk Drive Connector

| Pin | Signal Name | Signal Description             |
|-----|-------------|--------------------------------|
| 1   | SGND        | Shield ground                  |
| 2   | DPH0        | Motor phase 0                  |
| 3   | GND         | Signal ground                  |
| 4   | DPH1        | Motor phase 1                  |
| 5   | GND         | Signal ground                  |
| 6   | DPH2        | Motor phase 2                  |
| 7   | GND         | Signal ground                  |
| 8   | DPH3        | Motor phase 3                  |
| 9   | -12F        | -12 volts                      |
| 10  | WRREQ       | Write request                  |
| 11  | +5F         | +5 volts                       |
| 12  | +5F         | +5 volts                       |
| 13  | +12F        | +12 volts                      |
| 14  | ENBL1E/     | Drive select 1                 |
| 15  | +12F        | +12 volts                      |
| 16  | RDDATA      | Read data                      |
| 17  | +12F        | +12 volts                      |
| 18  | WRDATA      | Write data                     |
| 19  | +12F        | +12 volts                      |
| 20  | WRPROT      | Write protect                  |
| 21  | ENBL3E/     | Drive select 3                 |
| 22  | ENBL2E/     | Drive select 2                 |
| 23  | AII/        | Apple II emulation mode active |
| 24  | SIDE2/1     | Side select                    |
| 25  | NC          | No connection                  |
| 26  | EXT/        | External drive                 |

Connector type: 26-pin 2-row x 13-pin female IDC

This connector is present on the Apple III only.



# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Computer Ports

### Color Video Connector

| Pin | Signal Name | Signal Description  |
|-----|-------------|---|
| 1   | SG          | Shield ground   |
| 2   | XRGB4       | TTL output with instantaneous color information; linear-weighted sum of these four signals will form a true 16-color RGB video signal |
| 3   | SYNCH       | Composite sync signal (negative-going)  |
| 4   | PDI         | Not used  |
| 5   | XRGB1       | See pin 2   |
| 6   | GND         | Power and signal ground   |
| 7   | -5V         | -5 volts, 200-mA maximum current drain  |
| 8   | +12V        | +12 volts, 500-mA maximum current drain   |
| 9   | XRGB2       | See pin 2   |
| 10  | XRGB8       | See pin 2   |
| 11  | BWVID       | Black-and-white composite video; NTSC-compatible signal with negative-going sync; 1 volt peak-to-peak into a 75-ohm load              |
| 12  | NTSC        | Color composite video; NTSC-compatible signal with negative-going sync; 1 volt peak-to-peak into a 75-ohm load                        |
| 13  | GND         | Power and signal ground   |
| 14  | -12V        | -12 volts, 200-mA maximum current drain   |
| 15  | +5V         | +5 volts, 1 amp maximum current drain   |

Connector type: DA-15 male

This port supports the connection of any NTSC-compatible color or monochrome monitor. Additional circuitry is required to support an RGB monitor. Current ratings are with no peripheral cards installed.

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIgs, Macintosh II video cards, or EtherTalk Interface Card. **DO NOT** connect an Apple IIc, IIgs, Macintosh II video cards, or EtherTalk Interface Card device or cable to the Apple III or III Plus.

# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Computer Ports

### Joystick A Connector

| Pin | Signal Name | Signal Description   |
|-----|-------------|--|
| 1   | GND         | Shield ground  |
| 2   | +5V         | +5 volts   |
| 3   | GND         | Power and signal ground  |
| 4   | JS1-X       | Horizontal analog input, read by PDL(2); in Emulation mode, equivalent to Apple II Paddle 0 (GC0) input, read by PDL(0)                |
| 5   | JS1-B       | Joystick switch input, read by button (2); in Emulation mode, equivalent to Apple II Paddle 0 button (PB1) input, read by PEEK(-16287) |
| 6   | +12V        | +12 volts  |
| 7   | GND         | Power and signal ground  |
| 8   | JS1-Y       | Vertical analog input, read by PDL(3); in Emulation mode, equivalent to Apple II Paddle 2 (GC2) input, read by PDL(2)                  |
| 9   | JS1-SW      | Joystick switch input, read by button (3); in Emulation mode, equivalent to Apple II Paddle 2 button (PB3) input, read by PEEK(-16285) |

Connector type: DE-9 male

This port also supports the connection of a Silentype III printer.

Circuitry is provided for two analog devices (potentiometers) and two digital devices (switches). The analog inputs accept input voltage in the range of 0 to 2.2 volts and can sink 3 mA. The digital inputs are TTL.

# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Computer Ports

### Joystick B Connector

| Pin | Signal Name | Signal Description   |
|-----|-------------|--|
| 1   | GND         | Shield ground  |
| 2   | +5V         | +5 volts   |
| 3   | GND         | Power and signal ground  |
| 4   | JS0-X       | Horizontal analog input, read by PDL(0); in Emulation mode, equivalent to Apple II Paddle 1 (GC1) input, read by PDL(1)                |
| 5   | JS0-B       | Joystick switch input, read by Button (0); in Emulation mode, equivalent to Apple II Paddle 1 button (PB2) input, read by PEEK(-16286) |
| 6   | +12V        | +12 volts  |
| 7   | GND         | Power and signal ground  |
| 8   | JS0-Y       | Vertical analog input, read by PDL(1); in Emulation mode, equivalent to Apple II Paddle 3 (GC3) input, read by PDL(3)                  |
| 9   | JS0-SW      | Joystick switch input, read by Button (1); not used in Emulation mode  |

Connector type: DE-9 male

Circuitry is provided for two analog devices (potentiometers) and two digital devices (switches). The analog inputs accept input voltage in the range of 0 to 2.2 volts and can sink 3 mA. The digital inputs are TTL.



# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Interface Cards

### Universal Parallel Interface Card Pin-outs (Pins 1-20)

| Pin | Signal Name | Signal Description         |
|-----|-------------|----------------------------|
| 1   | DO0         | Port B, Data Output, bit 0 |
| 2   | DO1         | Port B, Data Output, bit 1 |
| 3   | DO2         | Port B, Data Output, bit 2 |
| 4   | DO3         | Port B, Data Output, bit 3 |
| 5   | DO4         | Port B, Data Output, bit 4 |
| 6   | DO5         | Port B, Data Output, bit 5 |
| 7   | DO6         | Port B, Data Output, bit 6 |
| 8   | DO7         | Port B, Data Output, bit 7 |
| 9   | NC          | No connection              |
| 10  | NC          | No connection              |
| 11  | GND         | Signal ground              |
| 12  | ACK         | Acknowledge input          |
| 13  | DI0         | Port B, Data Input, bit 0  |
| 14  | DI1         | Port B, Data Input, bit 1  |
| 15  | DI2         | Port B, Data Input, bit 2  |
| 16  | DI3         | Port B, Data Input, bit 3  |
| 17  | DI4         | Port B, Data Input, bit 4  |
| 18  | STROBE      | Strobe output              |
| 19  | DI5         | Port B, Data Input, bit 5  |
| 20  | DO0         | Port A, Data Output, bit 0 |



# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Interface Cards

### Universal Parallel Interface Card Pin-outs (Pins 21-40)

| Pin | Signal Name | Signal Description         |
|-----|-------------|----------------------------|
| 21  | DO1         | Port A, Data Output, bit 1 |
| 22  | DO2         | Port A, Data Output, bit 2 |
| 23  | DO3         | Port A, Data Output, bit 3 |
| 24  | DO4         | Port A, Data Output, bit 4 |
| 25  | DO5         | Port A, Data Output, bit 5 |
| 26  | DO6         | Port A, Data Output, bit 6 |
| 27  | DO7         | Port A, Data Output, bit 7 |
| 28  | DI6         | Port B, Data Input, bit 6  |
| 29  | DI7         | Port B, Data Input, bit 7  |
| 30  | GND         | Signal ground              |
| 31  | NC          | No connection              |
| 32  | NC          | No connection              |
| 33  | DRO         | Data Ready Output          |
| 34  | GND         | Signal ground              |
| 35  | GND         | Signal ground              |
| 36  | GND         | Signal ground              |
| 37  | GND         | Signal ground              |
| 38  | ACK         | Acknowledge                |
| 39  | GND         | Signal ground              |
| 40  | GND         | Signal ground              |

Connector type: 40-pin 2-row x 20-pin female IDC

Pins 11-30 are used to support a parallel printer.

# Apple III & Lisa/Mac XL Computers

## Apple III/III Plus Interface Cards

### Serial Card III Pin-outs

| Pin   | Signal Name | Signal Description  |
|-------|-------------|---------------------|
| 1     | SGND        | Shield ground       |
| 2     | TXD         | Transmit Data       |
| 3     | RXD         | Receive Data        |
| 4     | RTS         | Request To Send     |
| 5     | CTS         | Clear To Send       |
| 6     | DSR         | Data Set Ready      |
| 7     | GND         | Signal ground       |
| 8     | DCD         | Data Carrier Detect |
| 9-19  | NC          | No connection       |
| 20    | DTR         | Data Terminal Ready |
| 21-25 | NC          | No connection       |

Connector type: DB-25 male

This interface is compatible with RS-232 serial devices.

The signals are as listed above when the modem eliminator button is pushed IN. When the modem eliminator button is OUT, the Serial Card III signals are the same as the signals produced by a modem eliminator cable.

# Apple III & Lisa/Mac XL Computers

## Lisa/Macintosh XL Computer Ports

### Mouse Connector

| Pin | Signal Name | Signal Description                |
|-----|-------------|-----------------------------------|
| 1   | Switch 1    | Mouse switch                      |
| 2   | +5V         | +5 volts DC                       |
| 3   | GND         | System electrical ground          |
| 4   | Left        | Mouse movement - left             |
| 5   | Right       | Mouse movement - right            |
| 6   | Switch 2    | Connected to CHK on parallel port |
| 7   | Button      | Not used                          |
| 8   | Down        | Mouse movement - down             |
| 9   | Up          | Mouse movement - up               |

Connector type: DE-9 male

### Composite Video Connector

| Pin      | Signal Name | Signal Description       |
|----------|-------------|--------------------------|
| (Tip)    | VIDEO       | Composite video output   |
| (Sleeve) | GND         | System electrical ground |

Connector type: RCA phono plug



### Serial A Connector

| Pin | Signal Name | Signal Description    |
|-----|-------------|-----------------------|
| 1   | FG          | Frame Ground          |
| 2   | TXD         | Transmit Data         |
| 3   | RXD         | Receive Data          |
| 4   | RTS         | Request To Send       |
| 5   | CTS         | Clear To Send         |
| 6   | DSR         | Data Set Ready        |
| 7   | GND         | Signal Ground         |
| 8   | DCD         | Data Carrier Detect   |
| 15  | TXC         | Transmit clock input  |
| 17  | RXC         | Receive clock input   |
| 20  | DTR         | Data Terminal Ready   |
| 24  | TEXT        | Transmit clock output |

Connector type: DB-25 male

This interface is compatible with RS-232 serial devices.

**Serial B Connector**

| <b>Pin</b> | <b>Signal Name</b> | <b>Signal Description</b>                  |
|------------|--------------------|--|
| 1          | GND<br>FG          | Frame Ground<br>Frame Ground               |
| 2          | TXD-<br>TXD        | Transmit Data -<br>Transmit Data           |
| 3          | RXD-<br>RXD        | Receive Data -<br>Receive Data             |
| 4          | NC<br>RTS          | No connection<br>Request To Send           |
| 5          | NC                 | No connection                              |
| 6          | HSK/DSR<br>DSR     | Handshake/Data Set Ready<br>Data Set Ready |
| 7          | GND                | Signal ground                              |
| 19         | RXD+<br>RD         | Receive Data +<br>AppleTalk Receive Data   |
| 20         | TXD+/DTR<br>DTR    | Transmit Data +<br>Data Terminal Ready     |

Connector type: DB-25 male

The first set of signal names and descriptions listed applies to RS-422. The second set applies to RS-232.

**Parallel Connector**

| <b>Pin</b> | <b>Signal Name</b> | <b>Signal Description</b>  |
|------------|--------------------|----------------------------|
| 1          | GND                | System electrical ground   |
| 2          | GND                | System electrical ground   |
| 3          | DRW/               | Data direction             |
| 4          | GND                | System electrical ground   |
| 5          | DD0                | Data bit 0 (bidirectional) |
| 6          | DD1                | Data bit 1 (bidirectional) |
| 7          | N/C                | No connection - blocked    |
| 8          | DD2                | Data bit 2 (bidirectional) |
| 9          | GND                | System electrical ground   |
| 10         | GND                | System electrical ground   |
| 11         | DD5                | Data bit 5 (bidirectional) |
| 12         | DD6                | Data bit 6 (bidirectional) |
| 13         | DD7                | Data bit 7 (bidirectional) |
| 14         | GND                | System electrical ground   |
| 15         | PSTRB/             | Strobe (output)            |
| 16         | BSY                | Busy (input)               |
| 17         | CMD/               | Command                    |
| 18         | PARITY/            | Parity (bidirectional)     |
| 19         | OCD                | Device on-line status      |
| 20         | GND                | System electrical ground   |
| 21         | CRES/              | Reset (output)             |
| 22         | DD3                | Data bit 3 (bidirectional) |
| 23         | DD4                | Data bit 4 (bidirectional) |
| 24         | GND                | System electrical ground   |
| 25         | CHK                | Interrupt (input)          |

Connector type: DB-25 male

This interface is found only on the Lisa 2.0/2.5.



# Apple III & Lisa/Mac XL Computers

## Lisa/Macintosh XL Interface Cards

### Two-Port Parallel Card Pin-outs

| Pin | Signal Name | Signal Description         |
|-----|-------------|----------------------------|
| 1   | GND         | System electrical ground   |
| 2   | GND         | System electrical ground   |
| 3   | DRW/        | Data direction             |
| 4   | GND         | System electrical ground   |
| 5   | DD0         | Data bit 0 (bidirectional) |
| 6   | DD1         | Data bit 1 (bidirectional) |
| 7   | NC          | No connection - blocked    |
| 8   | DD2         | Data bit 2 (bidirectional) |
| 9   | GND         | System electrical ground   |
| 10  | GND         | System electrical ground   |
| 11  | DD5         | Data bit 5 (bidirectional) |
| 12  | DD6         | Data bit 6 (bidirectional) |
| 13  | DD7         | Data bit 7 (bidirectional) |
| 14  | GND         | System electrical ground   |
| 15  | PSTRB/      | Strobe (output)            |
| 16  | BSY         | Busy (input)               |
| 17  | CMD/        | Command                    |
| 18  | PARITY/     | Parity (bidirectional)     |
| 19  | OCD         | Device on-line status      |
| 20  | GND         | System electrical ground   |
| 21  | CRES/       | Reset (output)             |
| 22  | DD3         | Data bit 3 (bidirectional) |
| 23  | DD4         | Data bit 4 (bidirectional) |
| 24  | GND         | System electrical ground   |
| 25  | CHK         | Interrupt (input)          |

Connector type: DB-25 male

# Apple III & Lisa/Mac XL Computers

## Peripheral Cable Guides

### Apple III and III Plus Peripheral Cable Guide

|  | Service/Engineering<br>Part Number | Model #  | Cable<br>Color         |
|--|------------------------------------|--|------------------------|
| ImageWriter II and II/L<br>ImageWriter LQ <sup>†</sup><br>Apple Personal Modem<br>Data Modem 2400      | 590-0331<br>or<br>590-0555         | A2C0311<br>or<br>A2C0312                               | Beige<br>Smoke         |
| ImageWriter and IW 15-Inch<br>Scribe<br>Daisy Wheel Printer<br>AppleLine<br>Color Plotter <sup>§</sup> | 590-0037<br>and<br>590-0166        | A3C0352*+<br>NA<br>A3C0351*+<br>A2C0302*+<br>A3C0302*+ | Light gray<br><br>Gray |
| Cluster Controller   | 590-0037                           | NA   | Light gray             |
| Modem 300 and 1200   | 590-0121                           | A3C0354*   | Beige                  |
| Dot Matrix Printer with<br>Universal Parallel Interface<br>Card <sup>&amp;</sup>                       | 590-0036                           | NA   | Varies                 |

<sup>†</sup> The ImageWriter LQ must be set for 9600 baud when used with an Apple III/III Plus. Set DIP switch 2, positions 1 and 2, to ON.

<sup>§</sup> The Color Plotter must be set for seven data bits and odd parity for use with an Apple III/III Plus. Set switch 1 to ON and switch 2 to OFF.

<sup>&</sup> Set the auto line feed switch on the UPIC to AUTO.

# Apple III & Lisa/Mac XL Computers

## Peripheral Cable Guides

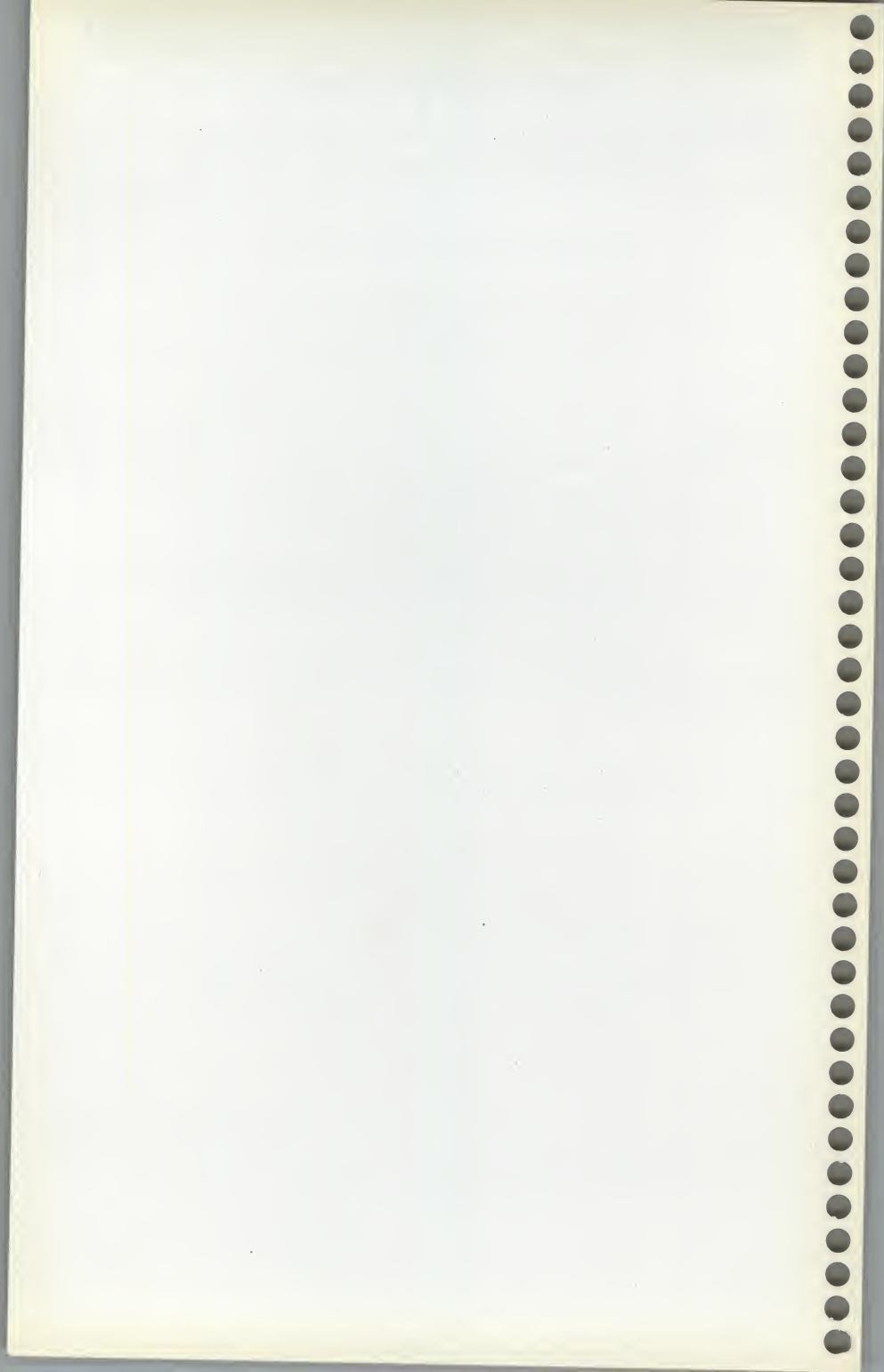
### Lisa and Macintosh XL Peripheral Cable Guide

|   | Service/Engineering<br>Part Number | Model #                                   | Cable<br>Color     |
|---|------------------------------------|---|--------------------|
| ImageWriter II and II/L<br>ImageWriter LQ†<br>Apple Personal Modem<br>Data Modem 2400 | 590-0331<br>or<br>590-0555         | A2C0311<br>or<br>A2C0312                  | Beige<br>Smoke     |
| ImageWriter and IW 15-Inch<br>Scribe<br>Daisy Wheel Printer<br>AppleLine              | 590-0037<br>and<br>590-0166        | A6C0352*+<br>A6C0355*+<br>A6C0351*+<br>NA | Light gray<br>Gray |
| Cluster Controller  | 590-0037                           | NA  | Light gray         |
| Modem 300 and 1200  | 590-0121                           | A6C0354*                                  | Beige              |
| Dot Matrix Printer  | 590-0042                           | NA  | Varies             |

Serial port A is the preferred port for connecting all serial devices, except AppleLine. AppleLine should be connected to serial port B.

† The ImageWriter LQ must be set for 9600 baud when used with a Lisa/Macintosh XL. Set DIP switch 2, positions 1 and 2, to ON.





# Peripherals

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# Peripherals

## Introduction

This section contains interface specifications for Apple peripheral devices. The factory switch settings of each device are shown in bold type.

### **Notes:**

This section refers to switches as either "ON" (closed) or "OFF" (open).

Switches marked "XX" are unused and can be set either ON or OFF.

A slash (/) after the signal name indicates that the signal is valid when the signal is low.

The connector specified is for the cable end, not the computer port.

# Peripherals

## Laser Printers

### LaserWriter II NT, II NTX, IIf, and IIg Pin-outs – RS-422

| Pin | Signal Name | Signal Description    |
|-----|-------------|-----------------------|
| 1   | HSKo        | Handshake out         |
| 2   | HSKi        | Handshake in          |
| 3   | TxD-        | Transmit Data -       |
| 4   | SG          | Signal Ground         |
| 5   | RxD-        | Receive Data -        |
| 6   | TxD+        | Transmit Data +       |
| 7   | GPI         | General-Purpose input |
| 8   | RxD+        | Receive Data +        |

Connector type: Mini DIN-8 male

### LaserWriter II NT, II NTX, IIf, and IIg Pin-outs – RS-232

| Pin | Signal Name | Signal Description  |
|-----|-------------|---------------------|
| 1   | SGND        | Signal ground       |
| 2   | TxD         | Transmitted Data    |
| 3   | RxD         | Received Data       |
| 4   | RTS         | Request To Send     |
| 5   | CTS         | Clear To Send       |
| 6   | DSR         | Data Set Ready      |
| 7   | SG          | Signal Ground       |
| 8   | DCD         | Data Carrier Detect |
| 20  | DTR         | Data Terminal Ready |
| 22  | RI          | Ring Indicator      |

Connector type: DB-25 male

# Peripherals

## Laser Printers

### LaserWriter II NTX, II SC, IIf, and IIg Pin-outs – SCSI Port

| Pin   | Signal Name | Signal Description |
|-------|-------------|--------------------|
| 1-12  | GND         | Signal ground      |
| 13    | NC          | No connection      |
| 14-25 | GND         | Signal ground      |
| 26    | DB0/        | Data Bit 0         |
| 27    | DB1/        | Data Bit 1         |
| 28    | DB2/        | Data Bit 2         |
| 29    | DB3/        | Data Bit 3         |
| 30    | DB4/        | Data Bit 4         |
| 31    | DB5/        | Data Bit 5         |
| 32    | DB6/        | Data Bit 6         |
| 33    | DB7/        | Data Bit 7         |
| 34    | DBP/        | Data Parity        |
| 35-37 | GND         | Signal ground      |
| 38    | +5V         | +5 volts           |
| 39    | GND         | Signal ground      |
| 40    | GND         | Signal ground      |
| 41    | ATN/        | Attention          |
| 42    | GND         | Signal ground      |
| 43    | BSY/        | Busy               |
| 44    | ACK/        | Acknowledge        |
| 45    | RST/        | Reset              |
| 46    | MSG/        | Message            |
| 47    | SEL/        | Select             |
| 48    | C/D/        | Control/Data       |
| 49    | REQ/        | Request            |
| 50    | I/O/        | Input/Output       |

Connector type: BR-50 male

# Peripherals

## Laser Printers

### LaserWriter IIg Pin-outs – Ethernet

| Pin   | Signal Name    | Signal Description                      |
|-------|----------------|---|
| 1     | FN Pwr         | +12 volts @ 175 mA or +5 volts @ 420 mA |
| 2     | DI-A           | Data In circuit A                       |
| 3     | DI-B           | Data In circuit B                       |
| 4     | VCC            | Voltage common                          |
| 5     | CI-A           | Control In circuit A                    |
| 6     | CI-B           | Control In circuit B                    |
| 7     | +5V            | +5 volts (from host)                    |
| 8     | +5V            | Secondary +5 volts (from host)          |
| 9     | DO-A           | Data Out circuit A                      |
| 10    | DO-B           | Data Out circuit B                      |
| 11    | VCC            | Secondary voltage common                |
| 12    | NC             | Reserved                                |
| 13    | NC             | Reserved                                |
| 14    | FN Pwr         | Secondary +12 volts or +5 volts         |
| Shell | Protective Gnd | Protective ground                       |

Connector type: Custom 14-pin .05-inch spaced ribbon



# Peripherals

## Laser Printers

### LaserWriter II NT – Switch 1

|                                       | 1          | 2          |
|---------------------------------------|------------|------------|
| <b>Communication and command mode</b> |            |            |
| <b>LocalTalk</b>                      | <b>OFF</b> | <b>OFF</b> |
| Diablo 630 emulation                  | ON         | OFF        |
| 9600 Baud RS-232 & RS-422             | OFF        | ON         |
| 1200 Baud RS-232 & RS-422             | ON         | ON         |

### LaserWriter II NTX – Switch 1

|                              | 1          | 2          | 3          | 4          | 5          | 6          |
|------------------------------|------------|------------|------------|------------|------------|------------|
| <b>Communication mode</b>    |            |            |            |            |            |            |
| <b>LocalTalk<sup>†</sup></b> | <b>OFF</b> | <b>OFF</b> |            |            |            |            |
| 1200 baud RS-232 & RS-422    | ON         | OFF        |            |            |            |            |
| 9600 baud RS-232 & RS-422    | OFF        | ON         |            |            |            |            |
| 9600 baud RS-232             | ON         | ON         |            |            |            |            |
| <b>Command mode</b>          |            |            |            |            |            |            |
| <b>PostScript batch</b>      |            |            | <b>OFF</b> | <b>OFF</b> |            |            |
| Diablo 630                   |            |            | ON         | OFF        |            |            |
| PostScript interactive       |            |            | OFF        | ON         |            |            |
| HP LaserJet                  |            |            | ON         | ON         |            |            |
| <b>Handshaking</b>           |            |            |            |            |            |            |
| <b>X-On/X-Off</b>            |            |            |            |            | <b>OFF</b> | <b>OFF</b> |
| X-On/X-Off                   |            |            |            |            | ON         | ON         |
| ETX/ACK                      |            |            |            |            | ON         | OFF        |
| Data Set Ready               |            |            |            |            | OFF        | ON         |

<sup>†</sup> If LocalTalk is selected, switches 3 through 6 are not used.

# Peripherals

## Laser Printers

### LaserWriter IIf and IIg – Pushbutton Switch

| Port          | Switch Setting                    | Connection Type   | Communication   |
|---------------|-----------------------------------|---|---|
| 8-pin serial  | 0-4<br>5<br>6-9                   | LocalTalk<br>9600 baud serial<br>User configurable  | PostScript<br>PostScript<br>User configurable   |
| 25-pin serial | 0 or 5<br>1<br>2<br>3<br>4<br>6-9 | 9600 baud serial<br>9600 baud serial<br>9600 baud serial<br>9600 baud serial<br>9600 baud serial<br>User configurable | PostScript<br>HP LaserJet emulation<br>Diablo emulation<br>Nonprinting input<br>PostScript<br>User configurable |
| Ethernet†     | 0-5<br>6-9                        | EtherTalk<br>EtherTalk  | PostScript<br>User configurable   |
| SCSI          | 0-9                               | SCSI  | Not affected by switch  |

† Ethernet port is available on the LaserWriter IIg only.

### Personal LaserWriter LS Pin-outs – RS-422

| Pin | Signal Name | Signal Description            |
|-----|-------------|-------------------------------|
| 1   | CLK         | Receive/transmit clock output |
| 2   | NC          | No connection                 |
| 3   | TxD-        | Transmit Data -               |
| 4   | SG          | Signal Ground                 |
| 5   | RxD-        | Receive Data -                |
| 6   | TxD+        | Transmit Data +               |
| 7   | NC          | No connection                 |
| 8   | RxD+        | Receive Data +                |

Connector type: Mini DIN-8 male

# Peripherals

## Laser Printers

### Personal LaserWriter NT Pin-outs – RS-422

| Pin | Signal Name | Signal Description    |
|-----|-------------|-----------------------|
| 1   | HSKo        | Handshake out         |
| 2   | HSKi        | Handshake in          |
| 3   | TxD-        | Transmit Data -       |
| 4   | SG          | Signal Ground         |
| 5   | RxD-        | Receive Data -        |
| 6   | TxD+        | Transmit Data +       |
| 7   | GPI         | General-Purpose input |
| 8   | RxD+        | Receive Data +        |

Connector type: Mini DIN-8 male

### Personal LaserWriter NT Pin-outs – RS-232

| Pin | Signal Name | Signal Description  |
|-----|-------------|---------------------|
| 1   | SGND        | Signal ground       |
| 2   | TxD         | Transmitted Data    |
| 3   | RxD         | Received Data       |
| 4   | RTS         | Request To Send     |
| 5   | CTS         | Clear To Send       |
| 6   | DSR         | Data Set Ready      |
| 7   | SG          | Signal Ground       |
| 8   | DCD         | Data Carrier Detect |
| 20  | DTR         | Data Terminal Ready |
| 22  | RI          | Ring Indicator      |

Connector type: DB-25 male



# Peripherals

## Laser Printers

### Personal LaserWriter SC Pin-outs – SCSI Port

| Pin   | Signal Name | Signal Description |
|-------|-------------|--------------------|
| 1-12  | GND         | Signal ground      |
| 13    | NC          | No connection      |
| 14-25 | GND         | Signal ground      |
| 26    | DB0/        | Data Bit 0         |
| 27    | DB1/        | Data Bit 1         |
| 28    | DB2/        | Data Bit 2         |
| 29    | DB3/        | Data Bit 3         |
| 30    | DB4/        | Data Bit 4         |
| 31    | DB5/        | Data Bit 5         |
| 32    | DB6/        | Data Bit 6         |
| 33    | DB7/        | Data Bit 7         |
| 34    | DBP/        | Data Parity        |
| 35-37 | GND         | Signal ground      |
| 38    | +5V         | +5 volts           |
| 39    | GND         | Signal ground      |
| 40    | GND         | Signal ground      |
| 41    | ATN/        | Attention          |
| 42    | GND         | Signal ground      |
| 43    | BSY/        | Busy               |
| 44    | ACK/        | Acknowledge        |
| 45    | RST/        | Reset              |
| 46    | MSG/        | Message            |
| 47    | SEL/        | Select             |
| 48    | C/D/        | Control/Data       |
| 49    | REQ/        | Request            |
| 50    | I/O/        | Input/Output       |

Connector type: BR-50 male



# Peripherals

## Laser Printers

### Personal LaserWriter NT – Thumbwheel Switch

| Switch Position | Connector       | Meaning  |
|-----------------|-----------------|--|
| 0               | 8-pin<br>25-pin | AppleTalk, PostScript batch mode<br>Serial, no input   |
| 1               | 8-pin<br>25-pin | Serial (9600, N, std, 1, XON), Postscript batch mode<br>Serial (9600, N, std, 1, XON), Postscript batch mode   |
| 2               | 8-pin<br>25-pin | Serial (9600, N, 1, XON), HP emulation<br>Serial (9600, N, 1, XON), HP emulation                               |
| 3               | 8-pin<br>25-pin | Serial (9600, N, 1, XON), Diablo emulation<br>Serial (9600, N, 1, XON), Diablo emulation                       |
| 4 <sup>†</sup>  | 8-pin<br>25-pin | Serial 1200, N, std, 1, XON, PostScript batch mode<br>Serial 1200, N, std, 1, XON, PostScript batch mode       |
| 5               | 8-pin<br>25-pin | Serial (9600, N), 8, (1, None), Postscript batch mode<br>Serial (9600, N), 8, (1, DTR), Postscript batch mode  |
| 6               | 8-pin<br>25-pin | Serial (9600, N), 8, (1, XON), Postscript binary mode<br>Serial (9600, N), 8, (1, XON), Postscript binary mode |
| 7               | 8-pin<br>25-pin | AppleTalk, PostScript batch<br>Serial, no input  |

For switch positions 1 through 6, the parameters are listed in the following order: data transfer rate, parity check, number of data bits, stop bits, handshake, and mode. The parentheses indicate that the parameter can be changed via software.

<sup>†</sup> When the switch is set to position 4 and the printer is turned on, a diagnostic page will be printed instead of the normal startup page.

# Peripherals

## Laser Printers

### LaserWriter and LaserWriter Plus Pin-outs – AppleTalk

| Pin | Signal Name | Signal Description |
|-----|-------------|--------------------|
| 3   | SG          | Signal Ground      |
| 4   | TXD+        | Transmit Data +    |
| 5   | TXD-        | Transmit Data -    |
| 8   | RXD+        | Receive Data +     |
| 9   | RXD-        | Receive Data -     |

Connector type: DB-9 male

Mode switch set to "AppleTalk" selects this port.

### LaserWriter and LaserWriter Plus Pin-outs – RS-232

| Pin | Signal Name | Signal Description  |
|-----|-------------|---------------------|
| 2   | TD          | Transmit Data       |
| 3   | RD          | Receive Data        |
| 4   | RTS         | Request To Send     |
| 7   | SG          | Signal Ground       |
| 20  | DTR         | Data Terminal Ready |

Connector type: DB-25 male

Mode switch set to "1200" or "9600" selects this port.

# Peripherals

## Non-Laser Printers

### StyleWriter Pin-outs

| Pin      | Signal Name | Signal Description           |
|----------|-------------|------------------------------|
| 1        | DTR         | Data Terminal Ready (output) |
| 2        | DSR         | Data Set Ready (input)       |
| 3        | TXD-        | Transmit Data (output)       |
| 4        | SG          | Signal Ground                |
| 5        | RXD-        | Receive Data (input)         |
| 6        | TXD+        | Balanced transmit + (output) |
| 7        | NC          | No connection                |
| 8        | RXD+        | Balanced receive + (input)   |
| (Shield) | PG          | Protective Ground            |

Connector type: Mini DIN-8 male

### ImageWriter II and II/L Pin-outs

| Pin      | Signal Name | Signal Description           |
|----------|-------------|------------------------------|
| 1        | DTR         | Data Terminal Ready (output) |
| 2        | DSR         | Data Set Ready (input)       |
| 3        | TXD-        | Transmit Data (output)       |
| 4        | SG          | Signal Ground                |
| 5        | RXD-        | Receive Data (input)         |
| 6        | TXD+        | Balanced transmit + (output) |
| 7        | NC          | No connection                |
| 8        | RXD+        | Balanced receive + (input)   |
| (Shield) | PG          | Protective Ground            |

Connector type: Mini DIN-8 male



# Peripherals

## Non-Laser Printers

### ImageWriter II and II/L – Switch 1

|                            | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Character set</b>       |     |     |     |     |     |     |     |     |
| <b>American</b>            | OFF | OFF | OFF |     |     |     |     |     |
| Italian                    | ON  | OFF | OFF |     |     |     |     |     |
| Danish                     | OFF | ON  | OFF |     |     |     |     |     |
| British                    | ON  | ON  | OFF |     |     |     |     |     |
| German                     | OFF | OFF | ON  |     |     |     |     |     |
| Swedish                    | ON  | OFF | ON  |     |     |     |     |     |
| French                     | OFF | ON  | ON  |     |     |     |     |     |
| Spanish                    | ON  | ON  | ON  |     |     |     |     |     |
| <b>Form length</b>         |     |     |     |     |     |     |     |     |
| <b>11 inches</b>           |     |     |     | OFF |     |     |     |     |
| 12 inches                  |     |     |     | ON  |     |     |     |     |
| <b>Perforation skip</b>    |     |     |     |     |     |     |     |     |
| <b>Disabled</b>            |     |     |     |     | OFF |     |     |     |
| Enabled                    |     |     |     |     | ON  |     |     |     |
| <b>Characters per inch</b> |     |     |     |     |     |     |     |     |
| 10                         |     |     |     |     |     | OFF | OFF |     |
| 12                         |     |     |     |     |     | ON  | OFF |     |
| 17                         |     |     |     |     |     | OFF | ON  |     |
| Proportional               |     |     |     |     |     | ON  | ON  |     |
| <b>Auto LF on CR</b>       |     |     |     |     |     |     |     |     |
| <b>Disabled</b>            |     |     |     |     |     |     |     | OFF |
| Enabled                    |     |     |     |     |     |     |     | ON  |



# Peripherals

## Non-Laser Printers

### ImageWriter II and II/L – Switch 2

|                                  | 1   | 2   | 3   | 4   | 5  | 6  |
|----------------------------------|-----|-----|-----|-----|----|----|
| <b>Baud rate</b>                 |     |     |     |     |    |    |
| 300                              | OFF | OFF |     |     |    |    |
| 1200                             | ON  | OFF |     |     |    |    |
| 2400                             | OFF | ON  |     |     |    |    |
| 9600                             | ON  | ON  |     |     |    |    |
| <b>Handshaking</b>               |     |     |     |     |    |    |
| <b>Hardware (DTR)</b>            |     |     | OFF |     |    |    |
| X-On/X-Off                       |     |     | ON  |     |    |    |
| <b>Option card</b>               |     |     |     |     |    |    |
| <b>Not installed</b>             |     |     |     | OFF |    |    |
| Installed                        |     |     |     | ON  |    |    |
| <b>Hammer firing<sup>†</sup></b> |     |     |     |     |    |    |
| Factory set                      |     |     |     |     | XX | XX |
| Factory set                      |     |     |     |     | XX | XX |

<sup>†</sup> Note: These switches modify adjustments critical to print quality. DO NOT change their settings unless you refer to the *ImageWriter LQ Technical Procedures* for additional information.

# Peripherals

## Non-Laser Printers

### ImageWriter LQ Pin-outs

| Pin            | Signal Name  | Signal Description                             |
|----------------|--------------|--|
| 1              | DTR<br>DSR   | Data Terminal Ready (output)<br>Data Set Ready |
| 2              | DSR<br>DTR   | Data Set Ready (input)<br>Data Terminal Ready  |
| 3              | TXD-<br>Rx D | Transmit Data - (output)<br>Received Data      |
| 4              | SG<br>GND    | Signal ground<br>Signal ground                 |
| 5              | RXD-<br>Tx D | Receive Data - (input)<br>Transmitted Data     |
| 6              | TXD+<br>NC   | Transmit Data + (output)<br>No connection      |
| 7              | NC           | No connection                                  |
| 8 <sup>†</sup> | RXD+         | Receive Data + (input)                         |
| (Shield)       | PG<br>Shield | Protective ground                              |

Connector type: Mini DIN-8 male

The first set of signal names and descriptions listed applies to RS-422. The second set applies to RS-232.

<sup>†</sup> Connect pin 8 to ground (pin 4) when connecting the ImageWriter LQ to an RS-232 interface.

# Peripherals

## Non-Laser Printers

### ImageWriter LQ – Switch 1

|                                 | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Character set</b>            |     |     |     |     |     |     |     |     |
| <b>American</b>                 | OFF | OFF | OFF |     |     |     |     |     |
| Italian                         | ON  | OFF | OFF |     |     |     |     |     |
| Danish                          | OFF | ON  | OFF |     |     |     |     |     |
| British                         | ON  | ON  | OFF |     |     |     |     |     |
| German                          | OFF | OFF | ON  |     |     |     |     |     |
| Swedish                         | ON  | OFF | ON  |     |     |     |     |     |
| French                          | OFF | ON  | ON  |     |     |     |     |     |
| Spanish                         | ON  | ON  | ON  |     |     |     |     |     |
| <b>Form length</b>              |     |     |     |     |     |     |     |     |
| <b>11 inches</b>                |     |     |     | OFF |     |     |     |     |
| 12 inches                       |     |     |     | ON  |     |     |     |     |
| <b>Perforation skip</b>         |     |     |     |     |     |     |     |     |
| <b>Disabled</b>                 |     |     |     |     | OFF |     |     |     |
| Enabled                         |     |     |     |     | ON  |     |     |     |
| <b>Characters/dots per inch</b> |     |     |     |     |     |     |     |     |
| 10 cpi                          |     |     |     |     |     | OFF | OFF |     |
| <b>12 cpi</b>                   |     |     |     |     |     | ON  | OFF |     |
| 17 cpi                          |     |     |     |     |     | OFF | ON  |     |
| 160 dpi                         |     |     |     |     |     | ON  | ON  |     |
| 216 dpi                         |     |     |     |     |     | ON  | ON  |     |
| <b>Auto LF on CR</b>            |     |     |     |     |     |     |     |     |
| <b>Disabled</b>                 |     |     |     |     |     |     |     | OFF |
| Enabled                         |     |     |     |     |     |     |     | ON  |



# Peripherals

## Non-Laser Printers

### ImageWriter LQ – Switch 2

|                                       | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Baud rate</b>                      |     |     |     |     |     |     |     |     |
| 1200                                  | ON  | OFF |     |     |     |     |     |     |
| 2400                                  | OFF | ON  |     |     |     |     |     |     |
| 9600                                  | ON  | ON  |     |     |     |     |     |     |
| 19200                                 | OFF | OFF |     |     |     |     |     |     |
| <b>Handshaking</b>                    |     |     |     |     |     |     |     |     |
| <b>Hardware (DTR)</b>                 |     |     | OFF |     |     |     |     |     |
| X-On/X-Off                            |     |     | ON  |     |     |     |     |     |
| <b>Option card</b>                    |     |     |     |     |     |     |     |     |
| <b>Not installed</b>                  |     |     |     | OFF |     |     |     |     |
| Installed                             |     |     |     | ON  |     |     |     |     |
| <b>Cut-sheet feeder bins attached</b> |     |     |     |     |     |     |     |     |
| 1                                     |     |     |     |     | OFF | OFF | ON  |     |
| 1 and 2                               |     |     |     |     | ON  | OFF | ON  |     |
| 1, 2, and 3                           |     |     |     |     | OFF | ON  | ON  |     |
| <b>1 and envelope</b>                 |     |     |     |     | OFF | OFF | OFF |     |
| 1, 2, and envelope                    |     |     |     |     | ON  | OFF | OFF |     |
| 1, 2, 3, and envelope                 |     |     |     |     | ON  | ON  | OFF |     |
| <b>Auto paper load position</b>       |     |     |     |     |     |     |     |     |
| <b>To print line</b>                  |     |     |     |     |     |     |     | OFF |
| To paper bail                         |     |     |     |     |     |     |     | ON  |



# Peripherals

## Non-Laser Printers

### ImageWriter LQ – Switch 3<sup>†</sup>

|                            | 1  | 2  | 3   | 4   | 5   | 6   | 7   | 8   |
|----------------------------|----|----|-----|-----|-----|-----|-----|-----|
| Not used                   | XX |    |     |     |     |     |     |     |
| Not used                   |    | XX |     |     |     |     |     |     |
| Color ribbon home position |    |    |     |     |     |     |     |     |
| Shift ribbon down          |    |    |     |     |     |     |     |     |
| .78125 mm                  |    |    | ON  | ON  | OFF |     |     |     |
| .46875 mm                  |    |    | OFF | ON  | OFF |     |     |     |
| .15625 mm                  |    |    | ON  | OFF | OFF |     |     |     |
| Shift ribbon up            |    |    |     |     |     |     |     |     |
| .78125 mm                  |    |    | ON  | ON  | ON  |     |     |     |
| .46875 mm                  |    |    | OFF | ON  | ON  |     |     |     |
| .15625 mm                  |    |    | ON  | OFF | ON  |     |     |     |
| Horizontal registration    |    |    |     |     |     |     |     |     |
| Left movement              |    |    |     |     |     |     |     |     |
| +0.159 mm                  |    |    |     |     |     | ON  | ON  | OFF |
| +0.106 mm                  |    |    |     |     |     | OFF | ON  | OFF |
| +0.053 mm                  |    |    |     |     |     | ON  | OFF | OFF |
| +0.000 mm                  |    |    |     |     |     | OFF | OFF | OFF |
| Right movement             |    |    |     |     |     |     |     |     |
| -0.044 mm                  |    |    |     |     |     | ON  | ON  | OFF |
| -0.088 mm                  |    |    |     |     |     | OFF | ON  | OFF |
| -0.132 mm                  |    |    |     |     |     | ON  | OFF | OFF |
| -0.176 mm                  |    |    |     |     |     | OFF | OFF | OFF |

<sup>†</sup> Note: These switches modify adjustments critical to print quality. DO NOT change their settings unless you refer to the *ImageWriter LQ Technical Procedures* for additional information.

# Peripherals

## Non-Laser Printers

### ImageWriter and ImageWriter 15-Inch Pin-outs

| Pin | Signal Name | Signal Description           |
|-----|-------------|------------------------------|
| 1   | FG          | Frame Ground                 |
| 2   | SD          | Send Data (output)           |
| 3   | RD          | Receive Data (input)         |
| 4   | RTS         | Request To Send (output)     |
| 7   | SG          | Signal Ground                |
| 14  | FAULT/      | Fault                        |
| 20  | DTR         | Data Terminal Ready (output) |

Connector type: DB-25 male

This is an RS-232 interface.

### ImageWriter and ImageWriter 15-Inch – Switch 2

|                    | 1   | 2   | 3   | 4  |
|--------------------|-----|-----|-----|----|
| <b>Baud rate</b>   |     |     |     |    |
| 300                | OFF | OFF |     |    |
| 1200               | ON  | OFF |     |    |
| 2400               | OFF | ON  |     |    |
| 9600               | ON  | ON  |     |    |
| <b>Handshaking</b> |     |     |     |    |
| <b>DTR</b>         |     |     | OFF |    |
| X-On/X-Off         |     |     | ON  |    |
| <b>Not used</b>    |     |     |     | XX |

# Peripherals

## Non-Laser Printers

### ImageWriter and ImageWriter 15-Inch – Switch 1

|                        | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Character set</b>   |     |     |     |     |     |     |     |     |
| <b>American</b>        | OFF | OFF | OFF |     |     |     |     |     |
| British                | ON  | ON  | OFF |     |     |     |     |     |
| German                 | OFF | OFF | ON  |     |     |     |     |     |
| French                 | OFF | ON  | ON  |     |     |     |     |     |
| Swedish                | ON  | OFF | ON  |     |     |     |     |     |
| Italian                | ON  | OFF | OFF |     |     |     |     |     |
| Spanish                | ON  | ON  | ON  |     |     |     |     |     |
| <b>Page length</b>     |     |     |     |     |     |     |     |     |
| <b>66 Lines</b>        |     |     |     | OFF |     |     |     |     |
| 72 Lines               |     |     |     | ON  |     |     |     |     |
| <b>Eighth data bit</b> |     |     |     |     |     |     |     |     |
| <b>Recognize</b>       |     |     |     |     | OFF |     |     |     |
| Ignore                 |     |     |     |     | ON  |     |     |     |
| <b>Character pitch</b> |     |     |     |     |     |     |     |     |
| Pica                   |     |     |     |     |     | OFF | OFF |     |
| <b>Elite</b>           |     |     |     |     |     | ON  | OFF |     |
| Ultra Condensed        |     |     |     |     |     | OFF | ON  |     |
| Elite Proportional     |     |     |     |     |     | ON  | ON  |     |
| <b>Auto LF on CR</b>   |     |     |     |     |     |     |     |     |
| <b>Disabled</b>        |     |     |     |     |     |     |     | OFF |
| Enabled                |     |     |     |     |     |     |     | ON  |



# Peripherals

## Non-Laser Printers

### Daisy Wheel Printer Pin-outs

| Pin | Signal Description | Pin   | Signal Description  |
|-----|--------------------|-------|---------------------|
| 1   | Protective ground  | 7     | Signal ground       |
| 2   | Transmit data      | 8     | Carrier detect      |
| 3   | Receive data       | 9-19  | No connection       |
| 4   | Request to send    | 20    | Data terminal ready |
| 5   | Clear to send      | 21-25 | No connection       |
| 6   | Data set ready     |       |                     |

Connector type: DB-25 male

This is an RS-232 interface.

# Peripherals

## Non-Laser Printers

### Daisy Wheel Printer – Inside Front Panel Switch

|                       | 1         | 2          | 3          | 4          | 5          | 6         | 7          | 8          |
|-----------------------|-----------|------------|------------|------------|------------|-----------|------------|------------|
| <b>Type pitch</b>     |           |            |            |            |            |           |            |            |
| 10 CPI                | OFF       | OFF        |            |            |            |           |            |            |
| <b>12 CPI</b>         | <b>ON</b> | <b>OFF</b> |            |            |            |           |            |            |
| 15 CPI                | OFF       | ON         |            |            |            |           |            |            |
| Proportional          | ON        | ON         |            |            |            |           |            |            |
| <b>Form length</b>    |           |            |            |            |            |           |            |            |
| 3 inches              |           |            | OFF        | OFF        | OFF        | OFF       |            |            |
| 3.5 inches            |           |            | ON         | OFF        | OFF        | OFF       |            |            |
| 4 inches              |           |            | OFF        | ON         | OFF        | OFF       |            |            |
| 5 inches              |           |            | OFF        | OFF        | ON         | ON        |            |            |
| 5.5 inches            |           |            | ON         | ON         | OFF        | OFF       |            |            |
| 6 inches              |           |            | OFF        | OFF        | ON         | OFF       |            |            |
| 7 inches              |           |            | ON         | OFF        | ON         | OFF       |            |            |
| 8 inches              |           |            | OFF        | ON         | ON         | OFF       |            |            |
| 8.5 inches            |           |            | ON         | ON         | ON         | OFF       |            |            |
| 9 inches              |           |            | ON         | OFF        | ON         | ON        |            |            |
| 10 inches             |           |            | OFF        | ON         | ON         | ON        |            |            |
| <b>11 inches</b>      |           |            | <b>OFF</b> | <b>OFF</b> | <b>OFF</b> | <b>ON</b> |            |            |
| 11.66 inches          |           |            | ON         | OFF        | OFF        | ON        |            |            |
| 12 inches             |           |            | OFF        | ON         | OFF        | ON        |            |            |
| 14 inches             |           |            | ON         | ON         | OFF        | ON        |            |            |
| 16 inches             |           |            | ON         | ON         | ON         | ON        |            |            |
| <b>Auto LF on CR</b>  |           |            |            |            |            |           |            |            |
| <b>Disabled</b>       |           |            |            |            |            |           | <b>OFF</b> |            |
| Enabled               |           |            |            |            |            |           | ON         |            |
| <b>Lines per inch</b> |           |            |            |            |            |           |            |            |
| <b>6</b>              |           |            |            |            |            |           |            | <b>OFF</b> |
| 8                     |           |            |            |            |            |           |            | ON         |

# Peripherals

## Non-Laser Printers

### Daisy Wheel Printer – Rear Panel Switch 1

|                          | 1          | 2          | 3         | 4   | 5   | 6   | 7   | 8   |
|--------------------------|------------|------------|-----------|-----|-----|-----|-----|-----|
| <b>Baud rate</b>         |            |            |           |     |     |     |     |     |
| 110                      | OFF        | OFF        | OFF       |     |     |     |     |     |
| 150                      | ON         | OFF        | OFF       |     |     |     |     |     |
| 300                      | OFF        | ON         | OFF       |     |     |     |     |     |
| 600                      | ON         | ON         | OFF       |     |     |     |     |     |
| <b>1200</b>              | <b>OFF</b> | <b>OFF</b> | <b>ON</b> |     |     |     |     |     |
| 2400                     | ON         | OFF        | ON        |     |     |     |     |     |
| 4800                     | OFF        | ON         | ON        |     |     |     |     |     |
| 9600 <sup>†</sup>        | <b>ON</b>  | <b>ON</b>  | <b>ON</b> |     |     |     |     |     |
| <b>Handshaking</b>       |            |            |           |     |     |     |     |     |
| <b>ETX/ACK &amp; DTR</b> |            |            |           | OFF | OFF |     |     |     |
| X-On/X-Off               |            |            |           | ON  | OFF |     |     |     |
| DTR                      |            |            |           | OFF | ON  |     |     |     |
| <b>Modem</b>             |            |            |           |     |     |     |     |     |
| <b>No modem</b>          |            |            |           |     |     | ON  |     |     |
| Modem                    |            |            |           |     |     | OFF |     |     |
| <b>Parity</b>            |            |            |           |     |     |     |     |     |
| <b>Space</b>             |            |            |           |     |     |     | ON  | ON  |
| Mark                     |            |            |           |     |     |     | OFF | ON  |
| Even                     |            |            |           |     |     |     | ON  | OFF |
| Odd                      |            |            |           |     |     |     | OFF | OFF |

<sup>†</sup> Factory setting initially 1200 baud. Changed to 9600 baud when shipped with the Lisa.



# Peripherals

## Non-Laser Printers

### Daisy Wheel Printer – Rear Panel Switch 2

|                            | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Character set</b>       |     |     |     |     |     |     |     |     |
| <b>ASCII Standard</b>      | OFF | OFF | OFF | OFF |     |     |     |     |
| USA WP                     | ON  | OFF | OFF | OFF |     |     |     |     |
| Italian                    | OFF | ON  | OFF | OFF |     |     |     |     |
| Swedish                    | ON  | ON  | OFF | OFF |     |     |     |     |
| English (UK)               | OFF | OFF | ON  | OFF |     |     |     |     |
| French                     | ON  | OFF | ON  | OFF |     |     |     |     |
| German                     | OFF | ON  | ON  | OFF |     |     |     |     |
| Spanish                    | ON  | ON  | ON  | OFF |     |     |     |     |
| <b>Print direction</b>     |     |     |     |     |     |     |     |     |
| <b>Bidirectional</b>       |     |     |     |     | ON  |     |     |     |
| Unidirectional             |     |     |     |     | OFF |     |     |     |
| <b>Auto LF on CR</b>       |     |     |     |     |     |     |     |     |
| <b>Disabled</b>            |     |     |     |     |     | OFF |     |     |
| Enabled                    |     |     |     |     |     | ON  |     |     |
| <b>Duplex</b>              |     |     |     |     |     |     |     |     |
| <b>Full</b>                |     |     |     |     |     |     | OFF |     |
| Half                       |     |     |     |     |     |     | ON  |     |
| <b>Paper-out condition</b> |     |     |     |     |     |     |     |     |
| <b>Stop printing</b>       |     |     |     |     |     |     |     | ON  |
| Continue printing          |     |     |     |     |     |     |     | OFF |

# Peripherals

## Non-Laser Printers

### Scribe Pin-outs

| Pin | Signal Name | Signal Description  |
|-----|-------------|---------------------|
| 1   | FG          | Frame Ground        |
| 2   | SD          | Send Data           |
| 3   | RD          | Receive Data        |
| 4   | RTS         | Request To Send     |
| 7   | SG          | Signal Ground       |
| 20  | DTR         | Data Terminal Ready |

Connector type: DB-25 male

This is an RS-232 interface.

# Peripherals

## Non-Laser Printers

### Scribe – Switch 1

|                        | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Character set</b>   |     |     |     |     |     |     |     |     |
| <b>American</b>        | OFF | OFF | OFF |     |     |     |     |     |
| Italian                | ON  | OFF | OFF |     |     |     |     |     |
| American               | OFF | ON  | OFF |     |     |     |     |     |
| British                | ON  | ON  | OFF |     |     |     |     |     |
| German                 | OFF | OFF | ON  |     |     |     |     |     |
| Swedish                | ON  | OFF | ON  |     |     |     |     |     |
| French                 | OFF | ON  | ON  |     |     |     |     |     |
| Spanish                | ON  | ON  | ON  |     |     |     |     |     |
| <b>Auto LF on CR</b>   |     |     |     |     |     |     |     |     |
| <b>Disabled</b>        |     |     |     | OFF |     |     |     |     |
| Enabled                |     |     |     | ON  |     |     |     |     |
| <b>Print intensity</b> |     |     |     |     |     |     |     |     |
| Darkest                |     |     |     |     | OFF | OFF |     |     |
| Dark                   |     |     |     |     | OFF | ON  |     |     |
| Light                  |     |     |     |     | ON  | OFF |     |     |
| <b>Lightest</b>        |     |     |     |     | ON  | ON  |     |     |
| <b>Baud rate</b>       |     |     |     |     |     |     |     |     |
| <b>9600</b>            |     |     |     |     |     |     | OFF |     |
| 1200                   |     |     |     |     |     |     | ON  |     |
| <b>Handshaking</b>     |     |     |     |     |     |     |     |     |
| <b>DTR</b>             |     |     |     |     |     |     |     | OFF |
| X-On/X-Off             |     |     |     |     |     |     |     | ON  |



# Peripherals

## Non-Laser Printers

### Dot Matrix Printer Pin-outs

| Pin   | Signal Name  | Signal Description              |
|-------|--------------|---------------------------------|
| 1     | DATA STB/    | Data strobe                     |
| 2     | DATA1        | Data bit 1                      |
| 3     | DATA2        | Data bit 2                      |
| 4     | DATA3        | Data bit 3                      |
| 5     | DATA4        | Data bit 4                      |
| 6     | DATA5        | Data bit 5                      |
| 7     | DATA6        | Data bit 6                      |
| 8     | DATA7        | Data bit 7                      |
| 9     | DATA8        | Data bit 8                      |
| 10    | ACK/         | Acknowledge                     |
| 11    | INPUT-BUSY   | Busy input                      |
| 12    | PE           | Paper empty                     |
| 13    | SELECT       | On/off-line status              |
| 14    | OV           | Ground                          |
| 15    | NC           | No connection                   |
| 16    | OV           | Ground                          |
| 17    | CGND         | Chassis ground                  |
| 18    | +5V          | +5 volts DC                     |
| 19-29 | GND          | Twisted pair ground (pins 1-11) |
| 30    | GND          | Twisted pair ground (pin 31)    |
| 31    | INPUT-PRIME/ | Reset input to printer          |
| 32    | FAULT/       | Error condition                 |
| 33    | OV           | Ground                          |
| 34    | NC           | No connection                   |
| 35    | NC           | No connection                   |
| 36    | INPUT-BUSY   | Busy input                      |

Connector type: TRW CINCH 57-30360 or equivalent

# Peripherals

## Non-Laser Printers

### Dot Matrix Printer – Switch 1

|                              | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Character set</b>         |     |     |     |     |     |     |     |     |
| <b>English (US)</b>          | OFF | OFF | OFF |     |     |     |     |     |
| Italian                      | ON  | OFF | OFF |     |     |     |     |     |
| English (UK)                 | ON  | ON  | OFF |     |     |     |     |     |
| German                       | OFF | OFF | ON  |     |     |     |     |     |
| Swedish                      | ON  | OFF | ON  |     |     |     |     |     |
| French                       | OFF | ON  | ON  |     |     |     |     |     |
| Spanish                      | ON  | ON  | ON  |     |     |     |     |     |
| <b>Lines per page</b>        |     |     |     |     |     |     |     |     |
| <b>66 Lines</b>              |     |     |     | OFF |     |     |     |     |
| 72 Lines                     |     |     |     | ON  |     |     |     |     |
| <b>Remote select</b>         |     |     |     |     |     |     |     |     |
| <b>Disabled</b>              |     |     |     |     | ON  |     |     |     |
| Enabled                      |     |     |     |     | OFF |     |     |     |
| <b>CR/LF on buffer full</b>  |     |     |     |     |     |     |     |     |
| <b>Enabled</b>               |     |     |     |     |     | ON  |     |     |
| Disabled                     |     |     |     |     |     | OFF |     |     |
| <b>Print upon receipt of</b> |     |     |     |     |     |     |     |     |
| <b>CR, LF, VT, US, or FF</b> |     |     |     |     |     |     | ON  |     |
| CR                           |     |     |     |     |     |     | OFF |     |
| <b>Auto LF on CR</b>         |     |     |     |     |     |     |     |     |
| <b>Disabled</b>              |     |     |     |     |     |     |     | OFF |
| Enabled                      |     |     |     |     |     |     |     | ON  |

# Peripherals

## Non-Laser Printers

### Dot Matrix Printer – Switch 2

|                             | 1   | 2   | 3  | 4  | 5   | 6   | 7   | 8   |
|-----------------------------|-----|-----|----|----|-----|-----|-----|-----|
| <b>Zero</b>                 |     |     |    |    |     |     |     |     |
| <b>Unslashed</b>            | OFF |     |    |    |     |     |     |     |
| <b>Slashed</b>              | ON  |     |    |    |     |     |     |     |
| <b>Buffer</b>               |     |     |    |    |     |     |     |     |
| <b>Single-line</b>          |     | ON  |    |    |     |     |     |     |
| <b>N-line</b>               |     | OFF |    |    |     |     |     |     |
| <b>Not used</b>             |     |     | XX |    |     |     |     |     |
| <b>Not used</b>             |     |     |    | XX |     |     |     |     |
| <b>Printing</b>             |     |     |    |    |     |     |     |     |
| <b>10 CPI (Pica)</b>        |     |     |    |    | OFF |     |     |     |
| <b>Proportional (Elite)</b> |     |     |    |    | ON  |     |     |     |
| <b>Word length</b>          |     |     |    |    |     |     |     |     |
| <b>7-Bit</b>                |     |     |    |    |     | ON  |     |     |
| <b>8-Bit</b>                |     |     |    |    |     | OFF |     |     |
| <b>Power-on status</b>      |     |     |    |    |     |     |     |     |
| <b>Selected</b>             |     |     |    |    |     |     | ON  |     |
| <b>Deselected</b>           |     |     |    |    |     |     | OFF |     |
| <b>Printing direction</b>   |     |     |    |    |     |     |     |     |
| <b>Bidirectional</b>        |     |     |    |    |     |     |     | OFF |
| <b>Unidirectional</b>       |     |     |    |    |     |     |     | ON  |



# Peripherals

## Non-Laser Printers

### Color Plotter Pin-outs

| Pin | Signal Name | Signal Description           |
|-----|-------------|------------------------------|
| 1   | FG          | Frame ground                 |
| 3   | Rx          | Receive Data (input)         |
| 4   | +12VDC      | +12 volts DC                 |
| 7   | SG          | Signal Ground                |
| 20  | DTR         | Data Terminal Ready (output) |

Connector type: DB-25 male

This is an RS-232 interface.

# Peripherals

## Non-Laser Printers

### Color Plotter – Switch 1

|                    | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Data length</b> |     |     |     |     |     |     |     |     |
| 7 bit              | ON  |     |     |     |     |     |     |     |
| 8 bit              | OFF |     |     |     |     |     |     |     |
| <b>Parity</b>      |     |     |     |     |     |     |     |     |
| Parity on          |     | OFF |     |     |     |     |     |     |
| Parity off         |     | ON  |     |     |     |     |     |     |
| Odd                |     |     | ON  |     |     |     |     |     |
| Even               |     |     | OFF |     |     |     |     |     |
| <b>Stop bits</b>   |     |     |     |     |     |     |     |     |
| 1 bit              |     |     |     | OFF | ON  |     |     |     |
| 1.5 bits           |     |     |     | ON  | OFF |     |     |     |
| 2 bits             |     |     |     | OFF | OFF |     |     |     |
| <b>Baud rate</b>   |     |     |     |     |     |     |     |     |
| 75                 |     |     |     |     |     | ON  | ON  | ON  |
| 150                |     |     |     |     |     | ON  | ON  | OFF |
| 300                |     |     |     |     |     | ON  | OFF | ON  |
| 600                |     |     |     |     |     | ON  | OFF | OFF |
| 1200               |     |     |     |     |     | OFF | ON  | ON  |
| 2400               |     |     |     |     |     | OFF | ON  | OFF |
| 4800               |     |     |     |     |     | OFF | OFF | ON  |
| 9600               |     |     |     |     |     | OFF | OFF | OFF |

# Peripherals

## Modems and Communications Devices

### Apple Personal Modem Pin-outs

| Pin | Signal Name | Signal Description           |
|-----|-------------|------------------------------|
| 1   | DSR         | Data Set Ready (output)      |
| 2   | DTR         | Data Terminal Ready (input)  |
| 3   | RXD         | Receive Data (output)        |
| 4   | SG          | Signal Ground                |
| 5   | TXD         | Transmit Data (input)        |
| 6   | SG          | Signal Ground                |
| 7   | DCD         | Data Carrier Detect (output) |
| 8   | NC          | No connection                |

Connector type: Mini DIN-8 male

This is an RS-232 interface.

### AppleFax Modem and Apple Data Modem 2400 Pin-outs

| Pin | Signal Name | Signal Description       |
|-----|-------------|--------------------------|
| 1   | HSKo        | Handshake (output)       |
| 2   | HSKi        | Handshake (input)        |
| 3   | TxD-        | Transmit data - (output) |
| 4   | SG          | Signal Ground            |
| 5   | RxD-        | Receive data - (input)   |
| 6   | TxD+        | Transmit data + (output) |
| 7   | GPi         | Carrier Detect (output)  |
| 8   | RxD+        | Receive data + (input)   |

Connector type: Mini DIN-8 male



# Peripherals

## Modems and Communications Devices

### Modem 300/1200 Pin-outs

| Pin | Signal Name | Signal Description  |
|-----|-------------|---------------------|
| 2   | DSR         | Data Set Ready      |
| 3   | SGND        | Signal Ground       |
| 5   | RCD         | Receive Data        |
| 6   | DTR         | Data Terminal Ready |
| 7   | DCD         | Data Carrier Detect |
| 8   | GND         | Chassis ground      |
| 9   | TXD         | Transmit Data       |

Connector type: DB-9 male

### Modem 300 – Switches

|                            | 1   | 2  | 3   |
|----------------------------|-----|----|-----|
| <b>Carrier detect</b>      |     |    |     |
| <b>Always high</b>         | ON  |    |     |
| Normal                     | OFF |    |     |
| <b>Not used</b>            |     | XX |     |
| <b>Data terminal ready</b> |     |    |     |
| <b>Computer supplies</b>   |     |    | OFF |
| Modem supplies             |     |    | ON  |

# Peripherals

## Modems and Communications Devices

### Modem 1200 – Switches

|                            | 1   | 2   | 3   |
|----------------------------|-----|-----|-----|
| <b>Carrier detect</b>      |     |     |     |
| Always high                | ON  |     |     |
| Normal                     | OFF |     |     |
| <b>PBX/CBX</b>             |     |     |     |
| Meets Bell standard (212A) |     | OFF |     |
| Doesn't meet Bell standard |     | ON  |     |
| <b>Data terminal ready</b> |     |     |     |
| Computer supplies          |     |     | OFF |
| Modem supplies             |     |     | ON  |

# Peripherals

## Modems and Communications Devices

### AppleLine Pin-outs

| Pin | Signal Name | Signal Description                |
|-----|-------------|-----------------------------------|
| 1   | SGND        | Shield ground                     |
| 2   | TXD         | Transmit Data (output)            |
| 3   | RXD         | Receive Data (input)              |
| 4   | RTS         | Request To Send (output)          |
| 5   | CTS         | Clear To Send (input)             |
| 6   | DSR         | Data Set Ready (input)            |
| 7   | GND         | Signal ground                     |
| 8   | DCD         | Data Carrier Detect (input)       |
| 12  | CH          | Data signal rate selector (input) |
| 20  | DTR         | Data Terminal Ready (output)      |
| 22  | CE          | Ring Indicator (input)            |

Connector type: DB-25 female

This is an RS-232 interface.



# Peripherals

## Modems and Communications Devices

### Cluster Controller Pin-outs – Asynchronous Direct Port

| Pin | Signal Name | Signal Description           |
|-----|-------------|------------------------------|
| 1   | GND         | Ground                       |
| 2   | TX          | Transmit Data (input)        |
| 3   | RX          | Receive Data (output)        |
| 4   | RTS         | Request To Send (input)      |
| 5   | CTS         | Clear To Send (output)       |
| 6   | DSR         | Data Set Ready (output)      |
| 7   | GND         | Ground                       |
| 8   | DCD         | Data Carrier Detect (output) |
| 20  | DTR         | Data Terminal Ready (input)  |

Connector type: DB-25 male

This is an RS-232 interface..

### Cluster Controller Pin-outs – Modem Port

| Pin | Signal Name | Signal Description           |
|-----|-------------|------------------------------|
| 1   | GND         | Ground                       |
| 2   | Tx          | Transmit Data (output)       |
| 3   | Rx          | Receive Data (input)         |
| 4   | RTS         | Request To Send (output)     |
| 5   | CTS         | Clear To Send (input)        |
| 6   | DSR         | Data Set Ready (input)       |
| 7   | GND         | Ground                       |
| 8   | DCD         | Data Carrier Detect (input)  |
| 20  | DTR         | Data Terminal Ready (output) |

Connector type: DB-25 male

This is an RS-232 interface.

# Peripherals

## Monitors

### AppleColor High-Resolution RGB Monitor Pin-outs

| Pin   | Signal Description    |
|-------|-----------------------|
| 1     | Red video ground      |
| 2     | Red video             |
| 3     | Composite TTL sync    |
| 4     | Composite sync ground |
| 5     | Green video           |
| 6     | Green video ground    |
| 7     | Not used              |
| 8     | Not used              |
| 9     | Blue video            |
| 10    | Not used              |
| 11    | Not used              |
| 12    | Not used              |
| 13    | Blue video ground     |
| 14    | Not used              |
| 15    | Not used              |
| Shell | Shield ground         |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. **DO NOT** connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the monitor.

# Peripherals

## Monitors

### Macintosh 12-Inch RGB Display Pin-outs

| Pin   | Signal Description     |
|-------|------------------------|
| 1     | Red video ground       |
| 2     | Red video              |
| 3     | Composite TTL sync     |
| 4     | Sense ID #1 (grounded) |
| 5     | Green video            |
| 6     | Green video ground     |
| 7     | Sense ID#2 (open)      |
| 8     | Not used               |
| 9     | Blue video             |
| 10    | Sense ID#3 (grounded)  |
| 11    | Not used               |
| 12    | Not used               |
| 13    | Blue video ground      |
| 14    | Not used               |
| 15    | Not used               |
| Shell | Shield ground          |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. DO NOT connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the monitor.



# Peripherals

## Monitors

### Apple High-Resolution Monochrome Monitor Pin-outs

| Pin   | Signal Description    |
|-------|-----------------------|
| 1     | Not used              |
| 2     | Not used              |
| 3     | Composite TTL sync    |
| 4     | Composite sync ground |
| 5     | Black and white video |
| 6     | Video ground          |
| 7     | Not used              |
| 8     | Not used              |
| 9     | Not used              |
| 10    | Not used              |
| 11    | Not used              |
| 12    | Not used              |
| 13    | Not used              |
| 14    | Not used              |
| 15    | Not used              |
| Shell | Shield ground         |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. DO NOT connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the monitor.

# Peripherals

## Monitors

### Macintosh 12-Inch Monochrome Monitor Pin-outs

| Pin   | Signal Description    |
|-------|-----------------------|
| 1     | Not used              |
| 2     | Not used              |
| 3     | Composite TTL sync    |
| 4     | Sense ID#1 (grounded) |
| 5     | Black and white video |
| 6     | Video ground          |
| 7     | Sense ID#2 (open)     |
| 8     | Not used              |
| 9     | Not used              |
| 10    | Sense ID#3 (open)     |
| 11    | Composite sync return |
| 12    | Not used              |
| 13    | Not used              |
| 14    | Not used              |
| 15    | Not used              |
| Shell | Shield ground         |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. DO NOT connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the monitor.

# Peripherals

## Monitors

### Apple Macintosh 21-Inch Color Display Pin-outs

| Pin   | Signal Description     |
|-------|------------------------|
| A1    | Blue video             |
| A2    | Green video            |
| A3    | Red video              |
| 1     | Horizontal sync return |
| 2     | Vertical sync          |
| 3     | Sense ID #3            |
| 4     | Sense ground           |
| 5     | Composite sync         |
| 6     | Horizontal sync        |
| 7     | Vertical sync return   |
| 8     | Sense ID #2            |
| 9     | Sense ID #1            |
| 10    | Composite sync return  |
| Shell | Shell Ground           |

Connector type: 13-pin, mixed-contact, D-type male (Dartech FM-13W3S or equivalent)



# Peripherals

## Monitors

### Apple Macintosh Portrait Display and Apple Two-Page Monochrome Monitor Pin-outs

| Pin   | Signal Description               |
|-------|----------------------------------|
| A1    | Monochrome video                 |
| A2    | 75-ohm                           |
| A3    | 75-ohm                           |
| 1     | Horizontal sync return           |
| 2     | Vertical sync                    |
| 3     | Sense ID #3                      |
| 4     | Sense ground                     |
| 5     | Composite sync (not used)        |
| 6     | Horizontal sync                  |
| 7     | Vertical sync return             |
| 8     | Sense ID #2                      |
| 9     | Sense ID #1                      |
| 10    | Composite sync return (not used) |
| Shell | Shell Ground                     |

Connector type: 13-pin, mixed-contact, D-type male (Dartech FM-13W3S or equivalent)

# Peripherals

## Monitors

### AppleColor RGB and ColorMonitor 100 Pin-outs

| Pin   | Signal Description    |
|-------|-----------------------|
| 1     | Red video ground      |
| 2     | Red composite video   |
| 3     | Composite sync        |
| 4     | Not used              |
| 5     | Green composite video |
| 6     | Green video ground    |
| 7     | Not used              |
| 8     | Not used              |
| 9     | Blue composite video  |
| 10    | Not used              |
| 11    | Not used              |
| 12    | Not used              |
| 13    | Blue video ground     |
| 14    | Not used              |
| 15    | Not used              |
| Shell | Shield ground         |

Connector type: DA-15 male

**CAUTION:** The signals on this connector are not the same as on the DA-15 of the Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card. DO NOT connect an Apple IIc, IIGS, III, III Plus, or EtherTalk Interface Card device or cable to the monitor.

# Peripherals

## Miscellaneous

### Apple Scanner, OneScanner, CD SC, CD SC Plus, HD SC, and Tape Backup 40 SC Pin-outs

| Pin   | Signal Name | Signal Description |
|-------|-------------|--------------------|
| 1-12  | GND         | Signal Ground      |
| 13    | NC          | No connection      |
| 14-25 | GND         | Signal Ground      |
| 26    | DB0/        | Data Bit 0         |
| 27    | DB1/        | Data Bit 1         |
| 28    | DB2/        | Data Bit 2         |
| 29    | DB3/        | Data Bit 3         |
| 30    | DB4/        | Data Bit 4         |
| 31    | DB5/        | Data Bit 5         |
| 32    | DB6/        | Data Bit 6         |
| 33    | DB7/        | Data Bit 7         |
| 34    | DBP/        | Data Parity        |
| 35-37 | GND         | Signal Ground      |
| 38    | +5V         | +5 volts           |
| 39    | GND         | Signal Ground      |
| 40    | GND         | Signal Ground      |
| 41    | ATN/        | Attention          |
| 42    | GND         | Signal Ground      |
| 43    | BSY/        | Busy               |
| 44    | ACK/        | Acknowledge        |
| 45    | RST/        | Reset              |
| 46    | MSG/        | Message            |
| 47    | SEL/        | Select             |
| 48    | C/D/        | Control/Data       |
| 49    | REQ/        | Request            |
| 50    | I/O/        | Input/Output       |

Connector type: BR-50 male



### Apple MIDI Interface Pin-outs

| Pin             | Signal Description |
|-----------------|--------------------|
| <b>MIDI IN</b>  |                    |
| 1               | No connection      |
| 2               | Shield ground      |
| 3               | No connection      |
| 4               | Interface enable   |
| 5               | Data in            |
| <b>MIDI OUT</b> |                    |
| 1               | No connection      |
| 2               | Shield ground      |
| 3               | No connection      |
| 4               | +5 volts           |
| 5               | Data out           |

Connector type: DIN-5 male

# Cables

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# Cables

## Introduction

This section contains information about pin connections, colors, and connector types for Apple peripheral cables. A list shows the computers and peripherals appropriate to each cable. Marketing part numbers are indicated for cables available through Apple sales. The illustrations at the end of the section show the pin numbering of each connector.

**Notes:**

The connector diagrams indicate the pin numbering on the male connector—the connector at the end of the cable, not on the computer or peripheral.

# Cables

## Serial Cables

### 590-0029

| DB-25 Male | DB-25 Female |
|------------|--------------|
| 1          | 1            |
| 2          | 3            |
| 3          | 2            |
| 4 and 5    | 8            |
| 6          | 20           |
| 7          | 7            |
| 8          | 4 and 5      |
| 20         | 6            |

Color: light gray

This is a modem eliminator cable, used to connect the Apple III, III Plus, or Lisa/Macintosh XL to serial ports on devices other than modems.

This cable has been replaced by 590-0166.

### 590-0037

| DB-25 Male | DB-25 Male |
|------------|------------|
| 1          | 1          |
| 2          | 2          |
| 3          | 3          |
| 4          | 4          |
| 5          | 5          |
| 6          | 6          |
| 7          | 7          |
| 8          | 8          |
| 20         | 20         |

Color: light gray

Used to connect the following devices:

Using a Super Serial Card: Apple II, II Plus, IIe, or IIGS to an AppleLine, Color Plotter, ImageWriter/ImageWriter 15-inch, Scribe, Daisy Wheel Printer, or Cluster Controller.

Apple IIGS or IIc Plus to an ImageWriter/ImageWriter 15-inch, Scribe, Daisy Wheel Printer, Color Plotter, or Cluster Controller. Also requires cable 590-0550.

Apple III, III Plus, or Lisa/Macintosh XL to an ImageWriter/ImageWriter 15-inch, Scribe, Daisy Wheel Printer, AppleLine, or Color Plotter. Also requires cable 590-0166.

Apple III, III Plus, or Lisa/Macintosh XL to a Cluster Controller.

# Cables

## Serial Cables

### 590-0121

| DB-25 Male | DE-9 Male |
|------------|-----------|
| 1          | 8         |
| 2          | 9         |
| 3          | 5         |
| 5 and 8    | 7         |
| 6          | 2         |
| 7          | 3         |
| 20         | 6         |

Color: beige

Used to connect the following devices:

Using a Super Serial Card: Apple II, II Plus, IIe, or IIGS to a Modem 300 or Modem 1200.

Apple IIGS or IIc Plus to a Modem 300 or Modem 1200. Also requires cable 590-0550.

Apple III or III Plus to a Modem 300 or Modem 1200.

Lisa/Macintosh XL to a Modem 300 or Modem 1200.

### 590-0166

| DB-25 Male | DB-25 Female |
|------------|--------------|
| 1          | 1            |
| 2          | 3            |
| 3          | 2            |
| 4 and 5    | 8            |
| 6          | 20           |
| 7          | 7            |
| 8          | 4 and 5      |
| 20         | 6            |

Color: gray

This is a modem eliminator cable, used to connect the Apple III, III Plus, or Lisa/Macintosh XL to serial ports on devices other than modems.

This cable replaces 590-0029.



# Cables

## Serial Cables

### 590-0169

| DE-9 Male | DB-25 Male |
|-----------|------------|
| 1         | 1          |
| 3 and 8   | 7          |
| 5         | 3          |
| 7         | 20         |
| 9         | 2          |

Color: medium brown

The marketing part number is M0150.

Used to connect the following devices:

Apple IIGS or IIc Plus to a Scribe, ImageWriter/ImageWriter 15-Inch, or Color Plotter. Also requires cable 590-0341.

Macintosh 128K, 512K, or 512K enhanced to an AppleLine, ImageWriter/ImageWriter 15-Inch, or Cluster Controller.

Macintosh Plus or later Macintosh to an ImageWriter/ImageWriter 15-Inch, AppleLine, or Cluster Controller. Also requires cable 590-0341 or 590-0553/699-0430.

### 590-0191

| DIN-5 Male | DB-25 Male |
|------------|------------|
| 1          | 6          |
| 2          | 3          |
| 3          | 7          |
| 4          | 2          |
| 5          | 20         |

Color: beige

Used to connect the following devices:

Apple IIc to a Daisy Wheel Printer, Scribe, ImageWriter/ImageWriter 15-Inch, Color Plotter, or AppleLine.

### 590-0192

| DIN-5 Male | DE-9 Male |
|------------|-----------|
| 1          | 6         |
| 2          | 9         |
| 3          | 3         |
| 4          | 5         |
| 5          | 2         |
| Shield     | 8         |

Color: beige

The marketing part number is A2C4505.

Used to connect the following devices:

Apple IIc to a Modem 300 or Modem 1200.

# Cables

## Serial Cables

### 590-0197

| DE-9 Male | DE-9 Male |
|-----------|-----------|
| 3 and 8   | 3 and 8   |
| 5         | 9         |
| 6         | 6         |
| 7         | 7         |
| 9         | 5         |

Color: medium brown

The marketing part number is M0170.

Used to connect the following devices:

Macintosh 128K, 512K, or 512K enhanced to a Modem 300 or Modem 1200.

Macintosh Plus or later Macintosh to a Modem 300 or 1200. Also requires cable 590-0341 or 590-0553.

### 590-0550

| Mini DIN-8 Male | DB-25 Female |
|-----------------|--------------|
| 1               | 6            |
| 2               | 20           |
| 3               | 3            |
| 4 and 8         | 7            |
| 5               | 2            |
| 7               | 4 and 5      |
| Shield          | Shield       |

Color: smoke

The marketing part number is A9M0333.

Apple IIGS and IIc Plus Peripheral Adapter Cable. Used to connect DB-25 cables to the Mini DIN-8 ports.

# Cables

## Serial Cables

### 590-0551 and 590-0332

| Mini DIN-8 Male | DE-9 Male |
|-----------------|-----------|
| 1 and 7         | 7         |
| 2               | 6         |
| 3               | 9         |
| 4               | 1         |
| 5               | 5         |
| 6               | 8         |
| 8               | 4         |

Color:  
590-0551—smoke  
590-0332—beige

The marketing part number is M0196.

Used to connect the following devices:

Macintosh 128K, 512K, 512K enhanced to an ImageWriter II/III, ImageWriter LQ, Apple Personal Modem, or Apple Data Modem 2400.

### 590-0552 and 590-0340

| Mini DIN-8 Male | Mini DIN-8 Male |
|-----------------|-----------------|
| 1               | 2               |
| 2               | 1               |
| 3               | 5               |
| 4               | 4               |
| 5               | 3               |
| 6               | 8               |
| 7               | 7               |
| 8               | 6               |

Color:  
590-0552—smoke  
590-0340—beige

The marketing part number is M0197.

Used to connect the following devices:

Apple IIGS or IIc Plus to an ImageWriter II/III, ImageWriter LQ, Apple Personal Modem, or Apple Data Modem 2400.

Macintosh Plus or later Macintosh to an ImageWriter II/III, ImageWriter LQ, StyleWriter, Apple Personal Modem, Apple Data Modem 2400, or AppleFax modem.



# Cables

## Serial Cables

**590-0553, 699-0430,  
and 590-0341**

| <b>Mini DIN-8<br/>Male</b> | <b>Mini DE-9<br/>Female</b> |
|----------------------------|-----------------------------|
| 1                          | 6                           |
| 2                          | 7                           |
| 3                          | 5                           |
| 4                          | 3 and 1                     |
| 5                          | 9                           |
| 6                          | 4                           |
| 8                          | 8                           |

Color:  
590-0553 and 699-0430—smoke  
590-0341—beige

The marketing part number is M0199. Part number 699-0430 is available from service only.

This adapter cable is used to connect DE-9 cables to devices with Mini DIN-8 ports.

**590-0554 and 590-0333**

| <b>DIN-5 Male</b> | <b>Mini DIN-8<br/>Male</b> |
|-------------------|----------------------------|
| 1                 | 2                          |
| 2                 | 5                          |
| 3                 | 4 and 8                    |
| 4                 | 3                          |

Color:  
590-0554—smoke  
590-0333—beige

The marketing part number is A2C4313.

Used to connect the following devices:

Apple IIc to an ImageWriter II/III, ImageWriter LQ, Apple Personal Modem, or Apple Data Modem 2400.

# Cables

## Serial Cables

### 590-0555 and 590-0331

| Mini DIN-8 Male | DB-25 Male |
|-----------------|------------|
| 1               | 6 and 8    |
| 2               | 20         |
| 3               | 3          |
| 4 and 8         | 7          |
| 5               | 2          |

Color:  
590-0555—smoke  
590-0331—beige

The marketing part number is A2C0312.

Used to connect the following devices:

Using a Super Serial Card: Apple II, II Plus, IIe, or IIGS to an Apple Data Modem 2400, Apple Personal Modem, ImageWriter II/III, or ImageWriter LQ.

Apple III or III Plus to an ImageWriter II/III, ImageWriter LQ, Apple Personal Modem, or Apple Data Modem 2400.

Lisa/Macintosh XL to an ImageWriter II/III, ImageWriter LQ, Apple Personal Modem, or Apple Data Modem 2400.

Macintosh Plus or later to an ImageWriter/ImageWriter 15-Inch.

This cable can also be used to connect the Apple IIGS, IIc Plus, Macintosh Plus, or later Macintosh computers to third-party serial printers using a DB-25 connector.

### 590-0556 and 590-0335

| DB-25 Male | Mini DIN-8 Male |
|------------|-----------------|
| 2          | 3               |
| 3          | 5               |
| 6 and 8    | 2               |
| 7          | 4 and 8         |
| 20         | 1               |

Color:  
590-0556—smoke  
590-0335—beige

The marketing part number is A2C0314.

Used to connect the following devices:

Using a Super Serial Card: Apple II, II Plus, IIe, or IIGS to an ImageWriter II/III, ImageWriter LQ, Apple Personal Modem, or Apple Data Modem 2400.

# Cables

## Video Cables

### 590-4161 and 590-0161

| DB-15 | DB-15 |
|-------|-------|
| 1     | 1     |
| 2     | 2     |
| 3     | 3     |
| 4     | 4     |
| 5     | 5     |
| 6     | 6     |
| 7     | 7     |
| 8     | 8     |
| 9     | 9     |
| 10    | 10    |
| 11    | 11    |
| 12    | 12    |
| 13    | 13    |
| 14    | 14    |
| 15    | 15    |
| Shell | Shell |

Color: smoke

Used to connect the following devices:

Macintosh II video cards or built-in video ports with DB-15 connectors to the AppleColor High-Resolution RGB Monitor, Macintosh 12-Inch RGB Display, Macintosh 12-Inch Monochrome Monitor, or Apple High-Resolution Monochrome Monitor.

Cable 590-4161 replaces cable 590-0161.

### 590-0615

| DB-15 Male   | 13-pin, mixed-contact D-connector |
|--------------|-----------------------------------|
| 1            | 14                                |
| 2            | 12                                |
| 3            | 10                                |
| 4, 7, and 10 | 11                                |
| 5            | 3                                 |
| 6            | 15                                |
| 8            | 7                                 |
| 9            | 4                                 |
| A3 (center)  | 9                                 |
| A3 (outer)   | 13                                |
| A2 (center)  | 5                                 |
| A2 (outer)   | 6                                 |
| A1 (center)  | 2                                 |
| A1 (outer)   | 1                                 |
| Shell        | Shell                             |

Color: smoke

Used to connect the following devices:

Macintosh IIci, IIx, or LC to an Apple Macintosh Portrait Display.

Macintosh Quadra 700 or 900 to an Apple Macintosh Portrait Display or Apple Two-Page Monochrome Monitor.

Apple Macintosh Portrait Display or Apple Two-Page Monochrome Monitor video cards (current versions) to an Apple Macintosh Portrait Display Monitor or Apple Two-Page Monochrome Monitor.



# Cables

## Video Cables

### 590-0562

| 13-pin,<br>mixed-contact<br>D-connector | 13-pin,<br>mixed-contact<br>D-connector |
|---|---|
| 1                                       | 1                                       |
| 2                                       | 2                                       |
| 3                                       | 3                                       |
| 4                                       | 4                                       |
| 5                                       | 5                                       |
| 6                                       | 6                                       |
| 7                                       | 7                                       |
| 8                                       | 8                                       |
| 9                                       | 9                                       |
| 10                                      | 10                                      |
| A3 (center)                             | A3 (center)                             |
| A3 (outer)                              | A3 (outer)                              |
| A2 (center)                             | A2 (center)                             |
| A2 (outer)                              | A2 (outer)                              |
| A1 (center)                             | A1 (center)                             |
| A1 (outer)                              | A1 (outer)                              |
| Shell                                   | Shell                                   |

Color: smoke

Used to connect the following devices:

Apple Two-Page Monochrome Monitor video card (obsolete version) to Apple Two-Page Monochrome Monitor.

### 590-0574

| 13-pin,<br>mixed-contact<br>D-connector | 13-pin,<br>mixed-contact<br>D-connector |
|---|---|
| 1                                       | 1                                       |
| 2                                       | 2                                       |
| 3                                       | 3                                       |
| 4                                       | 4                                       |
| 5                                       | 5                                       |
| 6                                       | 6                                       |
| 7                                       | 7                                       |
| 8                                       | 8                                       |
| 9                                       | 9                                       |
| 10                                      | 10                                      |
| A1 (center)                             | A1 (center)                             |
| A1 (outer)                              | A1 (outer)                              |
| Shell                                   | Shell                                   |

Color: smoke

Used to connect the following devices:

Apple Macintosh Portrait Display or Apple Two-Page Monochrome Monitor video cards (obsolete versions) to the Apple Macintosh Portrait Display Monitor or Apple Two-Page Monochrome Monitor.

# Cables

## SCSI Cables

### 658-8031 and 590-0345 (Pins 1 - 19)

| DB-25 Male | BR-50 Male      |
|------------|-----------------|
| 1          | 49              |
| 2          | 46              |
| 3          | 50              |
| 4          | 45              |
| 5          | 44              |
| 6          | 43              |
| 7          | 16, 18, and 19  |
| 8          | 26              |
| 9          | 20, 21, and 22  |
| 10         | 29              |
| 11         | 31              |
| 12         | 32              |
| 13         | 33              |
| 14         | 1, 2, and 3     |
| 15         | 48              |
| 16         | 4, 5, and 6     |
| 17         | 41              |
| 18         | 7, 8, 9, and 11 |
| 19         | 47              |

### 658-8031 and 590-0345 (Pins 20 - 25)

| DB-25 Male | BR-50 Male     |
|------------|----------------|
| 20         | 34             |
| 21         | 27             |
| 22         | 28             |
| 23         | 30             |
| 24         | 23, 24, and 25 |
| 25         | 38             |

Color:  
658-8031—smoke  
590-0345—beige

Used to connect Apple II or Macintosh computers having a SCSI interface to SCSI peripherals.

#### Compatible computers:

- Apple IIe or IIgs with an Apple II SCSI Interface Card or High Speed SCSI Interface Card
- All Macintosh computers except the 128K, 512K, 512K enhanced, and PowerBook series

#### Compatible peripherals:

- Hard Disk SC
- Tape Backup 40SC
- AppleCD SC and AppleCD SC Plus
- LaserWriter II SC
- Personal LaserWriter SC
- Apple Scanner and OneScanner

## Cables

### SCSI Cables

#### 658-8033 and 590-0347

This cable is wired straight through (1 to 1, 2 to 2, 3 to 3, etc.).

Pins 10, 12-15, 17, 35-37, 39, 40, and 42 are not connected.

**Color**

658-8033—smoke  
590-0347—beige

Used to extend the length of SCSI cables (male to female).

#### 658-8034 and 590-0346

This cable is wired straight through (1 to 1, 2 to 2, 3 to 3, etc.).

Pins 10, 12-15, 17, 35-37, 39, 40, and 42 are not connected.

**Color:**

658-8034—smoke  
590-0346—beige

Used to daisy-chain SCSI devices (male to male).



# Cables

## Parallel Cables

### 590-0036

| 20-pin IDC | TRW Cinch<br>57-30360 Male |
|------------|----------------------------|
| 1          | 14                         |
| 2          | 10                         |
| 3          | 33                         |
| 4          | 32                         |
| 5          | 31                         |
| 6          | 17                         |
| 7          | 11                         |
| 8          | 1                          |
| 9          | 12                         |
| 10         | 2                          |
| 11         | 3                          |
| 12         | 4                          |
| 13         | 5                          |
| 14         | 6                          |
| 15         | 7                          |
| 16         | 8                          |
| 17         | 9                          |
| 18         | 13                         |
| 19         | 18                         |
| 20         | 16                         |

Color: varies

Used to connect the following devices:

Using the Centronics Printer Card: Apple II, II Plus, IIe, or IIGS to a Dot Matrix Printer.

Using the Universal Parallel Interface Card: Apple III or III Plus to a Dot Matrix Printer.

### 590-0042

| DB-25 Male | AMP-36 Male |
|------------|-------------|
| 2          | 19          |
| 5          | 2           |
| 6          | 3           |
| 8          | 4           |
| 11         | 7           |
| 12         | 8           |
| 13         | 9           |
| 14         | 11          |
| 15         | 1           |
| 16         | 10          |
| 18         | 35          |
| 19         | 12          |
| 21         | 13          |
| 22         | 5           |
| 23         | 6           |
| 24         | 16          |
| 25         | 32          |

Color: light gray

Used to connect the following devices:

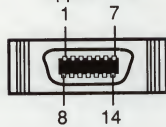
Using the Parallel Interface Card: Apple II, II Plus, IIe, or IIGS to a Dot Matrix Printer.

Lisa/Macintosh XL using the internal parallel interface (Lisa 2.0 or 2/5 only) or the 2-Port Parallel Card to a Dot Matrix Printer.

# Cables

## Connector Diagrams

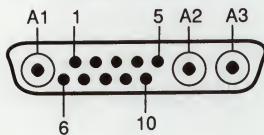
Apple AAUI



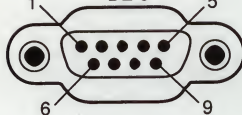
DIN-5



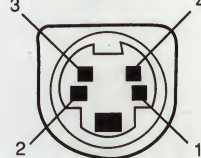
13-Pin, Mixed-Contact Connector



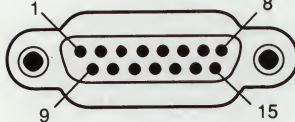
DE-9



Mini DIN-4



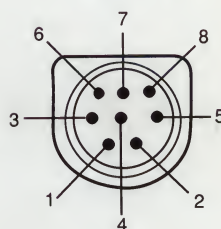
DA-15



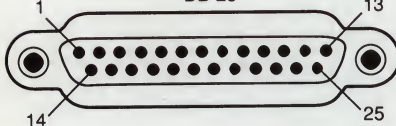
DB-19



Mini DIN-8



DB-25



BR-50

